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THE DATA FACTORY™

DATA BASE



THE DATA FACTORY™

The Data Factory is an electronic filing system that will store, search and sort records, and print out reports automatically. It's so powerful it's the only data base you'll ever need.

So Simple to Learn... So Easy to Use.

Extremely easy-to-follow, illustrated instructions will have you setting up your own files within the hour. You will be able to search through your records for a specific file... sort them alphabetically, numerically or by date. Print out the information in any sequence you need. And, only The Data Factory will do all this for you so fast, so easily and with so much flexibility. Truly, the finest introduction to electronic data management you can find.

So Powerful... So Flexible

The Data Factory is so fast, so flexible and so powerful it will easily handle the most complex data management demands. It searches up to 88 levels simultaneously. Sorts thousands of records in just seconds. Performs mathematical functions. Offers AND, OR, =, <, >, <>, and date selection criteria. Customizes printouts to any format. And, lets you add, delete or restructure fields without any time-consuming data re-entry.

It's the only data base you'll ever need.

For Apple II, IIe and IBM.

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SYSTEM REQUIREMENTS

ALL APPLE II'S, LASER 128
FP BASIC
TWO DISK DRIVES

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A.R.C. Road
P.O. Box 433-7550
Waukegan, IL 60087
(312) 433-7550

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Highland Park, IL 60035 (312) 433-7550

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UTILITY



THE DATA FACTORY™

Version 6.0

6.02
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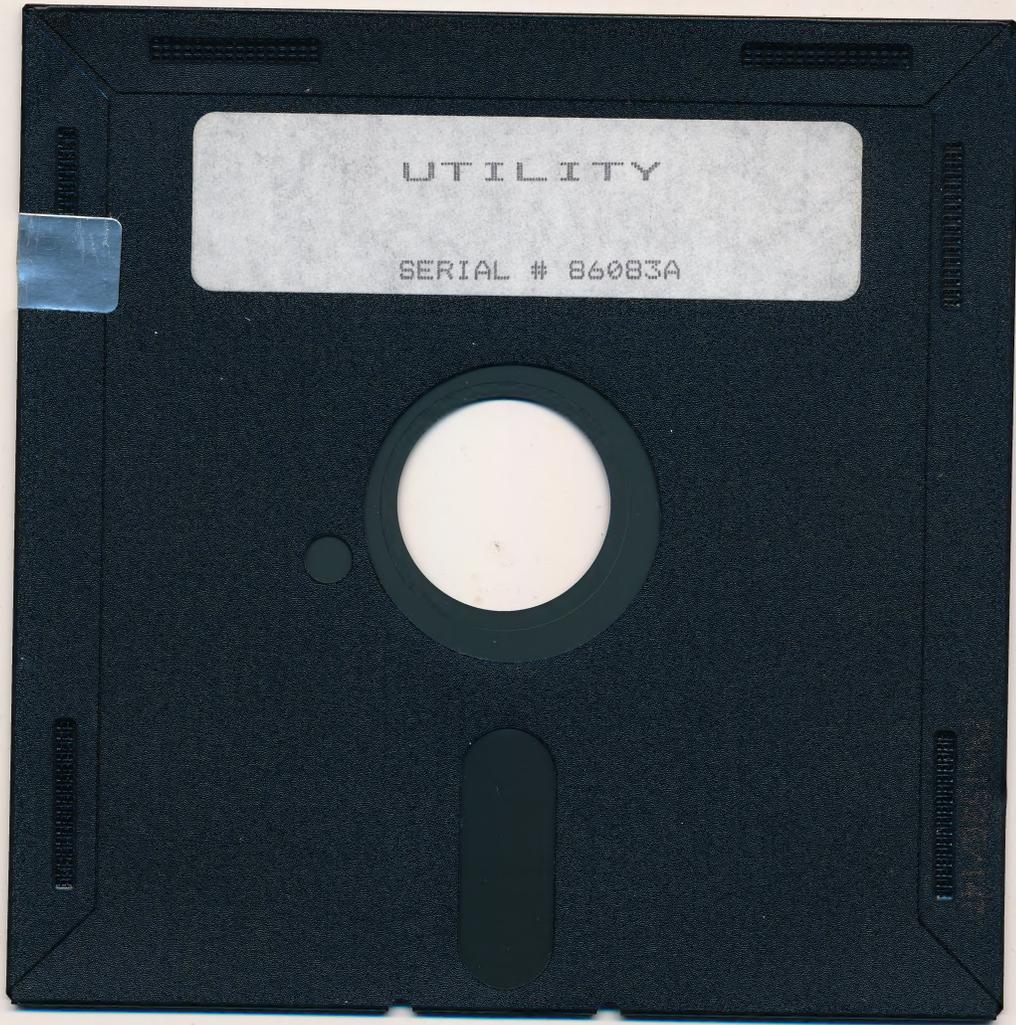
micro lab™
REPORT



THE DATA FACTORY™

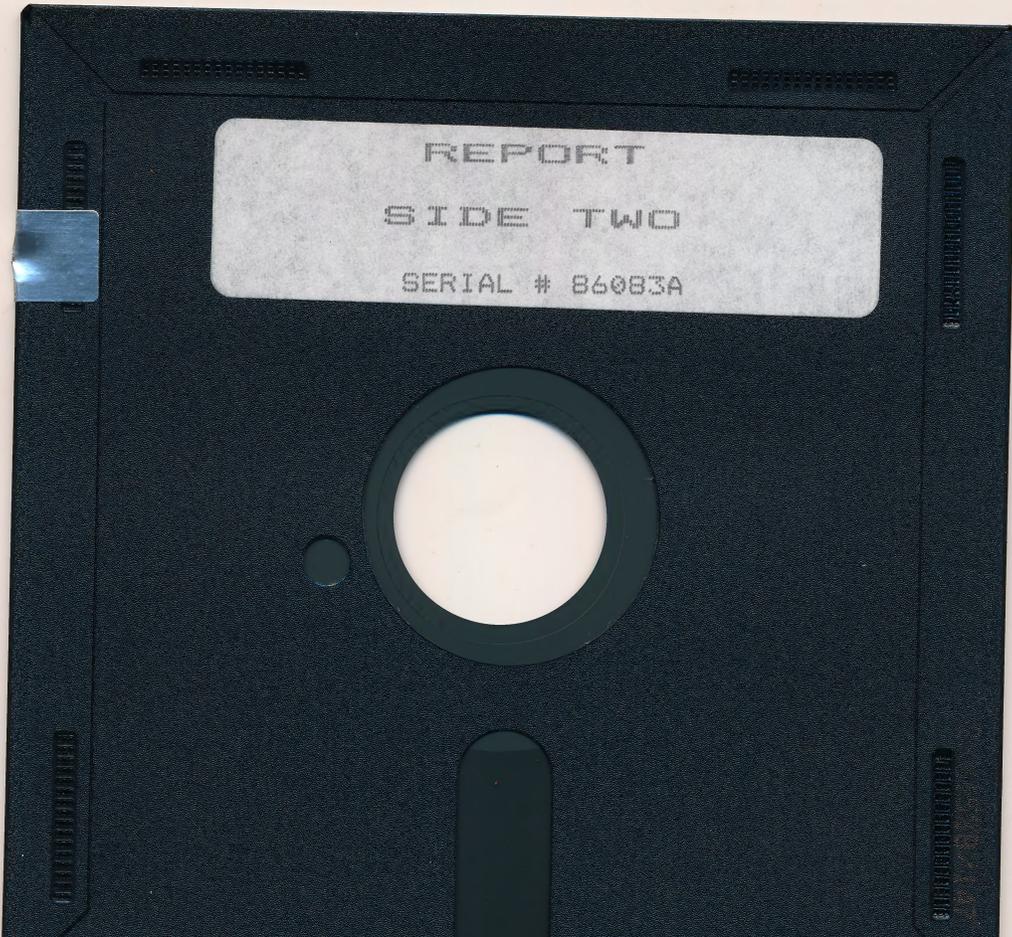
Version 6.0

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UTILITY

SERIAL # 86083A



REPORT

SIDE TWO

SERIAL # 86083A

micro lab®
COMPUTER PRODUCTS

presents

THE DATA FACTORY™

by
Ken Picha
Curt Rostenback
David Soussan

Documentation
by
Jan Schoppel
Janet Hotch

micro lab®
Creative computer products since 1980.

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Highland Park, IL 60035 (312) 433-7550

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INTRODUCTION

The Data Factory allows you to store and gain access to a large amount of related information easily and quickly. If you wish to store different types of information on different subjects, you can create a number of data bases to suit all of your needs.

The applications are limitless. You can keep track of recipes, important business records, investments, customer files, or company billing, just to name a few possibilities.

Understanding a Data Base

Creating a data base is easy once you understand a few basic principles involved.

Imagine you wish to keep track of all of the bills you owe. If you were doing this by hand you would:

1. Decide what form the records would take, (i.e., file folder, index cards, etc.). For this example, assume you select 5×7 cards on which to keep this information.
2. Then you would select a file box in which to store these records and you would put a label (NAME) on this FILE.
3. Next you would decide what information you want to keep on each card (RECORD). And, to make it easy to enter this information, you would probably have cards printed so that the information on each company appeared at the same location on each card. The card might look something like this:

COMPANY NAME: _____
STREET: _____
CITY: _____, STATE: __ ZIP: _____
AMOUNT DUE: _____
BILL DATE: _____

After formatting the RECORD card you would enter the DATA for each company. Then, you would have a RECORD for each company and you would place the RECORDS in a FILE named **BILLS TO BE PAID**.

When working with an electronic data base, a FILE (sometimes referred to as a DATA BASE) is a collection of RECORDS and the information on those records is referred to as DATA. DATA is composed of CHARACTERS. A character can be a letter, a number, a punctuation mark, or a blank space.

Now, there is only one more term to learn and you will be ready to work with an electronic DATA BASE. Each location, created for storing an item of information on a record (i.e., the NAME, STREET, ZIP, etc.), is referred to as a FIELD.

The planning of an electronic data base, like the planning of the card file shown above, is very important. The better you plan how you are going to organize your DATA BASE the easier it is to use.

Creating an Electronic Data Base

The first step in creating a data base is to pick a name. This name may be quite general but it should be descriptive of the information contained in the data base. For example, "Present Customers" or "Bills To Be Paid" are possible names.

Next, you must decide what kind of data you wish to keep in this data base. To take another example, if you were putting your sports club membership file onto your data base, you would probably keep a record of the member's name, address, date initiated, dues paid, amount of dues owed, other comments, and sponsor's name.

You would then break down this data into various categories of data so that you would be able to locate (ACCESS) each piece of data. For example, you would probably break down the address into separate fields for the STREET, CITY, STATE and ZIP CODE. This would allow you to quickly locate all of the members in a certain town, or to send out mailings by zip code, state, etc. Just how you break down each category depends upon your particular needs.

Lastly, you would have to specify the fields you want in the data base, how you want each field labeled, and how many characters you want to allow for the data that you plan to enter into each field.

WHAT YOU WILL NEED

1. An Apple II or IIe computer with 48k of memory and Applesoft resident in ROM.
2. Two disk drives
3. The two program disks: UTILITY disk, REPORT disk
4. At least two blank disks: one disk for storing data and another disk for storing formats.
5. A printer (optional).

NOTE: Micro Lab does not support the use of an alternate operating system on the Data Factory program disk.

NOTE TO APPLE IIe USERS: If you are using an Apple IIe, the program will *not* accept lower case characters when entering commands or field names but will allow you to use lower case when entering data into fields. Also, you can opt to use the eighty column feature when listing a report, but it cannot be used at any other time during the program.

CONVERT TO NEW VERSION

See the Utilities chapter.

BACK UP PROGRAM AND DATA DISKS

You should make a copy of the two Data Factory program disks before working with them. You will use the disk copy program, COPYA, to do this.

As you store information on your Data disks, there is a possibility that something unforeseen may happen to destroy the information, losing that file. All smart and experienced computer people

BACK UP the information onto another disk from time to time. You should back up your Data disk whenever you edit the records or when records are added. You should also back up your Format disk whenever you add a format. If you do not back up your disks, and lose the information they contain, you will have to re-enter all of the information.

Use the RUN COPYA program which is on your 3.3 DOS System Master disk which came with your Apple computer:

- 1) Place the System Master disk into drive #1 and turn on the computer.
- 2) When the first screen appears . . .

TYPE: RUN COPYA
PRESS: (RETURN)

- 3) The following line will appear on the screen:

ORIGINAL SLOT: DEFAULT = 6

This message refers to your hardware.

If the drive controller card for drive #1 is in slot 6 . . .

PRESS: (RETURN)

If the drive controller card for drive #1 is in any other slot . . .

ENTER: The number of the slot where the card is located.

The following line will appear on the screen:

DRIVE: DEFAULT = 1

This message refers to the drive in which you will place the disk you wish to copy.

You will put the original disk into drive #1 . . .

PRESS: (RETURN)

The following line will appear:

DUPLICATE SLOT: DEFAULT = 6

It is most common for both drives to be connected to the same drive controller card. If this is the case, and the card is in slot #6 . . .

PRESS: (RETURN)

Otherwise . . .

ENTER: The number of the slot containing the card for the second drive.

The following line will appear:

DRIVE 2 DEFAULT = 2

This line refers to the drive in which you will place the back up disk.

You will put the back up disk into drive #2 . . .

PRESS: (RETURN)

- 4) The following line will appear across the bottom of the screen:

-- PRESS 'RETURN' KEY TO BEGIN COPY --

Before pressing return:

Place the disk you wish to copy into drive #1.

Place the back up disk into drive #2.

When the disks are in place . . .

TYPE: (RETURN)

The program will copy your disks.

When the copy is finished, you will be prompted . . .

DO YOU WISH TO MAKE ANOTHER COPY?

Answer this question by typing Y for Yes or N for No.

HOW TO USE THIS MANUAL

This manual provides general instructions as well as specific examples. The practice example is designed to illuminate the wide variety of features available. Therefore, it is strongly advised that you read the entire manual through at least once and enter the practice data before creating your data base.

At the back of the manual there is a glossary of computer terms and a summary at the end of each chapter.

Every term in the glossary also appears in the index. If you need to obtain more details for a term, you can easily find the item in the manual by looking it up in the index.

After you have read the manual and entered the practice examples, use the summaries to refresh your memory on the basics of the program.

STANDARD FEATURES

RETURN KEY: It is often necessary to press (RETURN) after typing an entry. This indicates to the computer that you have finished the particular entry and are ready for the next step in the program. If you make a mistake when typing characters and have not yet pressed (RETURN), back over the mistake, using the left arrow key, and type the entry correctly.

NOTE: Because the (RETURN) key is required after almost every entry, it is sometimes not mentioned in the text. Should you make an entry and nothing happens, try pressing the (RETURN) key.

PROMPT: A question or message that appears on the screen asking for information or giving instructions, is called a prompt.

Y/N PROMPTS: Whenever a prompt ends with (Y/N) and you wish to select N for no, you may save keystrokes by simply pressing (RETURN). If, however, you wish to answer Y for yes, you must type Y and then press (RETURN).

CHARACTER: Letters, numbers, punctuation marks, or blank spaces are all characters.

CURSOR: There is a little blinking box which appears on the screen indicating where the next character you enter will appear; this box is referred to as the cursor.

CONTROL KEYS: To activate the control key commands, press and hold the control key and then press the key which follows the word CONTROL.

NOTE: When you are to hold down the first key while pressing a second key, the instructions will be connected by a dash (-), and placed within parentheses. For example, instructions to hold down the control key while typing A, will be documented:

TYPE: (CONTROL-A)

QUITTING THE PROGRAM: Be sure to return to the MENU SELECTION LIST before turning off the computer.

TWO VOLUME DATA BASES: If you have created a large data base, all of the records cannot fit onto one disk. When this is the case, you can place the remaining records on a second disk.

The two data disks are referred to as VOLUME 1 and VOLUME 2. The practice data base in the manual is a relatively small one, and can thus fit onto one volume. If you have a two volume data base, it is up to you to follow the prompts in the program and change the Data disks as indicated. See the next section, DISK SWAPPING for details.

DISK SWAPPING: If the program needs to have a specific disk in the drive before continuing with the program, you will be prompted to insert the correct disk into the correct drive.

Because it is sometimes impossible to anticipate which disks you will have in the drives, these prompts will not always be documented in the manual. If you receive one of these prompts, follow them. After you have inserted the appropriate disk, the program will continue, and you can continue using the documentation.

Typically, these prompts are as follows:



PLEASE INSERT
NAME OF 2 VOL DATA BASE VOL 2
INTO DRIVE 1
AND PRESS (RETURN)

The actual name of your data base will appear in the place of NAME OF 2 VOL DATA BASE. This prompt is asking you to insert the second volume of the data base into drive #1.



PLEASE INSERT
REPORT DISK
INTO DRIVE 1
AND PRESS (RETURN)

This prompt is asking you to insert the Data Factory Report disk into drive #1.

PLEASE INSERT
UTILITY DISK
INTO DRIVE 1
AND PRESS (RETURN)

This prompt is asking you to insert the Data Factory Utility disk into drive #1.

PLEASE INSERT
BILLS TO BE PAID VOL 1
INTO DRIVE 2
AND PRESS (RETURN)

NOTE: This prompt is asking you to insert volume 1 of the Data disk with which you are working; it will appear even if your data base is not on two volumes (disks). If your data base is only contained on one volume (disk), simply insert the Data disk.

LOAD PROGRAM DISK INTO DRIVE #1
THEN PRESS 'RTN'

This prompt refers to either program disk, the Utility or Report disk.

ENTER PRACTICE DATA: When the manual expects you to type something into the program, one of the following command words will be printed on a separate line: TYPE, PRESS, CHOOSE, ENTER. The following are examples of how these words will appear and how you are to interpret their function:

TYPE: A

Simply press the A key.

TYPE: A (RETURN)

Press A and then press (RETURN).

PRESS: (RETURN)

The word PRESS is only used in conjunction with (RETURN) and indicates that you should press return without first typing a character.

CHOOSE: option #1 ENTER DATA from the MENU SELECTION LIST. Press (RETURN).

The word **CHOOSE** is used to indicate that you are choosing one of several possible option numbers. It is always followed by:

- 1) the option number you are to enter.
- 2) the corresponding name of the option.
- 3) the menu on which that option appears.
- 4) a reminder to press (RETURN) after entering the option number.

ENTER: The number of the format you wish to use.

The word **ENTER** is used when the exact entry you need to make cannot be anticipated in the manual. When this is the case, the entry you need to make is described and you must type the appropriate response based on that description.

START A DATA BASE

Initializing Format Disks

Before you begin work with the Data Factory, you should initialize one or more disks using the System Master Disk which came with your Apple computer. These extra disks will be used to store configurations which you design for use with data entry and display. These configurations are called FORMATS. The disks used for this purpose are called FORMAT DISKS.

NOTE: You only need to initialize the Format disk before you use it for the first time.

Insert your System Master disk (the one that came with your Apple computer) into drive #1 and a blank disk into drive #2 and turn on the computer. When the cursor appears . . .

TYPE: NEW (RETURN)
TYPE: INIT HELLO, D2
PRESS: (RETURN).

The disk will be initialized.

WARNING: Any initialization process erases everything on the disk, so be careful to insert the correct disk into the correct drive.

After you have initialized the disk, put it aside. You will use it later in the program with the following routines:

UPDATE
INPUT EDITOR
LIST/REPORT
SEARCH
MASTER SEARCH
OUTPUT EDITOR

NOTE: These disks are used to store formats ONLY, and not for storing files. See the next section "Initializing a Data Disk" for instructions on how to prepare disk for storage of data.

Initializing a Data Disk

The Data Factory program automatically initializes the disk which will be used for data storage. Only a diskette initialized by using the Data Factory program can be used to store data. You may use:

- 1) a new disk
- 2) a disk that you no longer need for data storage.

NOTE: You only need to initialize the Data disk before you use it for the first time.

Insert the Data Factory Utility disk into drive #1.

IMPORTANT: You must use the Utility disk each time you begin using the program. If you insert the Report disk you will be prompted to insert the Utility disk instead.

Insert the disk to be initialized (the one upon which you wish to store data) into drive #2.

WARNING: The initialization process erases everything on the disk, so be careful to insert the correct one into drive #2.

TURN ON THE COMPUTER and then close the drive door when the "in use" light on the drive comes on. This will ensure that the disk is centered in the drive.

Two title screens will appear while the program is loading. After a few seconds the following menu will appear:

SELECT FILE :

1. CATALOG ANOTHER DISK
2. INITIATE A NEW FILE
3. QUIT

SELECT (1-3)?

Option #1 allows you to insert a different Data disk into drive #2. If there is a data file on the new disk you insert, you may select to use the file contained on the disk.

Option #2 allows you to start a new file on the Data disk currently in drive #2. Remember that you are only allowed to have one file on a disk. If there is already a file on the disk, that file will be erased when you choose this option.

Option #3 ends the program. You will be prompted to insert a boot disk, meaning that you can insert any Apple program disk into drive #1 at this time.

NOTE: If the disk in drive #2 already had a file on it which was, for example, titled **BILLS TO BE PAID**, the screen would have read:

SELECT FILE:

1. **BILLS TO BE PAID**
2. CATALOG ANOTHER DISK
3. INITIATE A NEW FILE
4. QUIT

SELECT (1-4)

This screen indicates that there is already a file on the disk and choosing option #1 enables you to work with the file. (See the section called Using the Data Base Each Day, page 22)

IMPORTANT: You can only store one Data Factory 6.0 *version* file per disk.

At this time, you need to initiate a new file.

ENTER: the number which corresponds to INITIATE A NEW FILE and press (RETURN).

If this is the first time the Data Factory program has been used, the corresponding number will be 2. Therefore, you should . . .

TYPE: 2 (RETURN)

The following prompt will appear:

PLEASE INSERT A BLANK DISK
INTO DRIVE 2
AND PRESS (RETURN)

Take this opportunity to make certain that the correct disk is in the drive.

Press (RETURN) when you are ready for initialization to take place.

The screen should now read:

PLEASE INSERT A BLANK DISK
INTO DRIVE 2
AND PRESS (RETURN)

THIS WILL DESTROY ALL DATA
ON DRIVE 2

PRESS (I) TO INITIALIZE
PRESS (R) TO RESTART
OR (Q) TO QUIT

Press **R** if you wish the program to try to read the Data disk again. You may wish this to be done if you believe that there is already a Data Factory file on the disk and you want to use it.

Press **Q** to quit and leave the program entirely. After pressing **Q**, you will be told to insert a boot disk. You may insert any Apple program disk at this time.

Press **I ONLY** if you want the disk to be initialized and its contents erased.

Because you need to initialize a disk for the practice example . . .

TYPE: I (RETURN)

The red light on the disk drive will come on and the drive will whirr for a few seconds while the disk is being initialized.

Enter File Name

After the Data disk has been initialized, you will be prompted to enter the file name.

The screen will read:

ENTER FILE NAME

A file name can have a maximum of 25 characters. A beep will sound if you try to exceed this number. The first character of the name must be a letter from A-Z. After the first character, you may choose any character from your Apple keyboard *except* a comma.

For the example . . .

TYPE: BILLS TO BE PAID (RETURN)

You can only store one Data Factory 6.0 *version* file per disk.

Take the Data disk out of drive #2 and label it, BILLS TO PAID. After you have labeled the disk, place it back into drive #2.

Password

Next you are prompted to enter a password.

The screen will read:



ENTER PASSWORD

The use of a password is optional. If you wish to use a password, each time the data file is selected the password must be entered before you can use the file. **WARNING:** Neither you nor anyone else will be permitted to use this file until the word is typed exactly as it is entered here. Therefore, you should choose a word that you will remember, but that other people will not guess.

The password may be changed or eliminated when the **MENU SELECTION LIST** appears on the screen. To make a change, you may use the secret menu option #49. When the **MENU SELECTION LIST** appears on the screen, enter 49 and place the Utility disk into drive #1 when prompted. You will be told what the current password is and given the opportunity to enter a new one.

Because no password is needed for the practice example, you can skip this entry . . .

TYPE: (RETURN) (*with no entry*).

DESIGNATING FIELDS

You are now ready to enter the fields of your data base. You must enter the length and name for every field you wish to have in your data base.

Length of field

After responding to the password prompt, the screen will read:

PRESS (CTRL-B) TO VIEW FIELDS
PRESS (O) WHEN FINISHED
ENTER LENGTH OF FIELD 1 (1-239)

You are being asked to enter the length of field #1. This number should correspond to the MAXIMUM number of characters you will enter into field #1. You can enter any number from 1-239.

NOTES ON FIELD LENGTH

The longer you make the field, the fewer records you can store in your data base. You should try to choose a number large enough to accommodate any data you plan to enter, but not so large that you waste valuable storage space. (NOTE: If necessary, you can change a field length later in the program by using the Reconfigure routine.)

There is another consideration when establishing field length. The NAME which you will assign to the field cannot contain more characters than the field length you have established. For example, if you designate a length of two for a field which is going to contain a state code, you will not be able to name the field "STATE." Usually the best strategy is to abbreviate the field name. You could, for example, enter "ST" as the field name. However, if you feel that you must have a longer field name, you will have to lengthen the field (in the case of the STATE field, you would have to enter a length of 5).

For the practice example the length of field #1 is 25 . . .

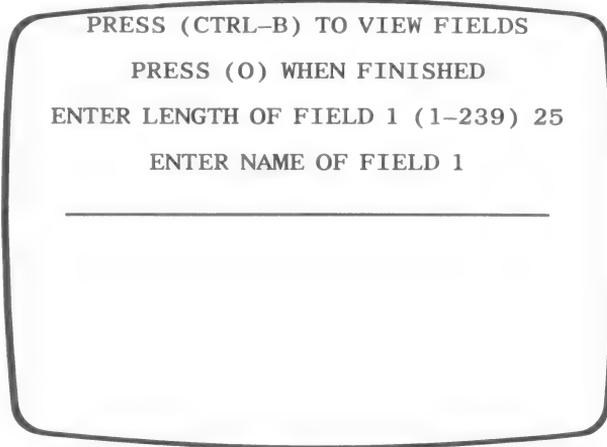
TYPE: 25 (RETURN).

Enter Field Name

After having entered the field length, you must enter the field name. REMEMBER: The field name cannot be longer than the

number of characters designated for the field length. The name for this field can have a maximum of 25 characters.

The screen should now look like this:



PRESS (CTRL-B) TO VIEW FIELDS
PRESS (O) WHEN FINISHED
ENTER LENGTH OF FIELD 1 (1-239) 25
ENTER NAME OF FIELD 1

For the first field name . . .

TYPE: COMPANY NAME (RETURN)

The following prompt will appear at the bottom of the screen:



JUSTIFY FIELD (Y/N)

When printing reports, Data Factory can print the numbers so that the decimals points are aligned:

23.00
123.56
3.30

NOTES ON JUSTIFICATION

A justified field contains a number which can be used in mathematical functions. For example, a field which contains zip codes, or social security numbers does not need to be justified, since these numbers are not meant to be used in mathematical calculations.

Before aligning justified field entries on reports, the program will convert any whole numbers to decimals. The program will place a decimal point at the end of the number and then add zeros after the decimal. In the Printer Control section, you may enter the number of digits you wish to have appear after the decimal point. The program will automatically assume two decimal places unless you indicate another value. For example, if you enter the number 356 into a justified field, it will be converted to 356.00.

IMPORTANT: In order to justify a field, the field *name* must be at least one character shorter than the field *length*; otherwise, the justify prompt will not appear.

Since the COMPANY NAME field will not contain numbers, the field does not need to be justified . . .

TYPE: N (RETURN)

NOTE: If you realize that you have made a mistake after you have entered the field information, continue entering the data for all of the fields of your data base. After the data has been entered, you will have the opportunity to make changes.

If, at any time during field entry, you wish to review the field information which you have already entered, press (CTRL-B) and (RETURN).

Now the screen will show the prompt for the next field.

NOTE: You may enter a maximum of 88 fields per data base.

For the example, enter the following information for the remaining fields:

REMEMBER: Press (RETURN) after each entry.

FIELD #	FIELD LENGTH	FIELD NAME	JUSTIFY
2)	30	STREET	N
3)	20	CITY	N
4)	2	ST	(not asked)
5)	5	ZIP	N

6) 9 AMT DUE Y
7) 8 BILL DAY (not asked)

When you have finished entering the data . . .

TYPE: 0 (zero) (RETURN)

The screen should now read:

FIELD#	LENGTH	NAME	
1	(25)	COMPANY NAME	
2	(30)	STREET	
3	(20)	CITY	
4	(2)	ST	
5	(5)	ZIP	
6	(9)	AMT DUE	(J)
7	(8)	BILL DAY	
0	ALL CORRECT		
1-7	EDIT		
8	RESTART		
SELECT (0-8) ?			

If you have made any errors while entering the field information, enter the number which corresponds to the field which needs editing. Enter the correct information.

If you wish to erase ALL of the information and enter it again, choose the number which appears to the left of the word RESTART.

After you make certain that you have entered all of the practice information correctly . . .

TYPE: 0 (RETURN)

NOTE: After this point, you must use the Inspect/Change routine to change the field name and justification. If you need to change the field length or add a field, you must use the Reconfigure routine. (See the Reconfigure chapter for details.)

Maximum Sort Field

The prompt on the screen should now read:



PRESS (RETURN) TO VIEW FIELDS
ENTER THE LENGTH OF THE LONGEST FIELD
YOU WILL SORT (10-239)

A sort is performed when you wish to put the records in a certain order. For example, you could sort alphabetically by the company name, or numerically by the amount due.

The number you enter for the maximum sort field must equal the length of the longest field upon which you will perform a sort.

NOTE: You must always enter a number within the range specified in the prompt. For the above example, this means that even if you were not going to sort on a field as large as 10, you would still have to enter 10.

The number you enter at this time will affect the number of records that can be maintained in memory during the Sort. The longer the maximum sort field, the fewer records can be stored in memory and sorted. The program needs to have all of the records read from the disk and stored in memory in order to sort the file.

Although you must be careful to enter a number as large as the longest field to be sorted, and within the specified range, do not enter a number too much larger than you are apt to need.

In the practice example, the longest field is field #2, STREET, which has 30 characters. It is, however, unlikely you will want to perform a sort on this field. Therefore, you can enter 25 (the length of the COMPANY NAME field) as the maximum sort field length and save valuable space for storage.

For this example . . .

TYPE: 25 (RETURN).

The program will tell you that it is WRITING FILE VARIABLES.

Wait a few seconds and the disk drive will stop running.

Date or Remark

The following prompt should appear on your screen:

ENTER TODAY'S DATE OR REMARK

This entry is optional. Whatever is entered at this time you may choose to have appear on your standard reports generated by the LIST/REPORT option. You may also have this information appear in a Custom Output format. If you do not wish to make an entry at this time, press (RETURN).

Because you do not need to make an entry for the practice example . . .

PRESS: (RETURN)

The disk will spin for a few seconds, processing data. When it stops, the MENU SELECTION LIST will appear.

Using the Data Base Each Day

After you have created a data base, each time you wish to use the file there are only a few simple steps to follow . . .

- 1) Insert the Utility disk into drive #1 and insert the Data disk into drive #2. Turn on the computer.
- 2) You will see the Title Screen and then a menu containing the present data file as the first option. Choose option #1 to work with the file on the disk. If the file you want is not on the disk, choose the CATALOG ANOTHER DISK option and insert another Data disk when prompted. You may then choose to work with the file contained on that disk.
- 3) If you have assigned a password to the file, you will be prompted to enter it.
- 4) You will be prompted to enter a DATE OR REMARK. You may enter any date or remark you wish or you may press (RETURN) to skip the entry.

The disk drive will run and then the MENU SELECTION LIST will appear.

NOTE: If you are already using the Data Factory and wish to start a new data base, choose option #10 from the MENU SELECTION LIST, insert a blank disk into drive #2 and choose to "Initiate A New File."

REMEMBER: After you have finished using your Data disk for the day, or whenever you make important or lengthy additions to it, BACK-UP YOUR DATA DISK. It is also advisable to occasionally make a listing of the records in the data base to make certain that everything is in order.

SUMMARY

To start a new data base, you must insert the Utility disk into drive #1, and a blank disk to be initialized into drive #2.

After Initialization, enter a file name and, if you wish, a password.

You will then be prompted to enter field information. This information includes the field name, length, and justification. The number of characters in the field name cannot exceed the field length. Furthermore, if you want the field justified, the name must be shorter than the field length. You should only justify numeric fields which you wish to contain a decimal.

After entering all of the field information (a maximum of 88 fields may be established) you must enter the Maximum Sort Field. Determine the length of the longest field you will need to sort. Do not enter a number which is longer than you will need. The larger the number entered, the fewer number of records can be stored in your data base.

Finally, you will be prompted to enter a date or a remark. This is an optional entry. Whatever information you do enter, can be printed on the reports generated by Data Factory.

To use a data base which has already been created, insert the Utility disk into drive #1, the Data disk into drive #2 and turn on the computer. Choose to work with the file currently on disk and then enter the password, if one has been assigned. Enter any

date or remark you wish, and press (RETURN). The MENU SELECTION LIST will appear.

FILE INFORMATION

Menu Selection List

The Data Factory MENU SELECTION LIST should now be on your screen. This menu lists all of the program's routines. To the left of each option is a number. When you want to enter any routine, type the corresponding number and press (RETURN).

MENU SELECTION LIST	
BILLS TO BE PAID	
<UTILITY>	<REPORT>
1. ENTER DATA	11. FILE INFO
2. INSPECT/CHANGE	12. LIST/REPORT
3. SORT	13. SEARCH
4. UPDATE	14. MASTER SEARCH
5. REPLACE	15. INDEX
6. DELETE RECORDS	16. MATH
7. RECONFIGURE	17. OUTPUT EDITOR
8. INPUT EDITOR	18. PRINTER CONTROL
9. DELETE FILES	
10. SELECT FILES	
<BOTH>	
19. DELETE FORMAT	20. REPAIR/RENAME
21. EXIT	
SELECT (1-21)	

Note that the menu is divided into sections. The first ten options use the UTILITY disk. Options 11-18 use the REPORT disk. You may use either disk with options 19-21.

IMPORTANT: If you wish to turn off the computer after using the program be sure that you always return to the MENU SELECTION LIST. If you exit the program at any other time, you may lose the data you have just entered.

FILE INFO ROUTINE

The first routine you will use is option #11 File Information.

Since option #11 is used with the Report disk, remove the Utility disk from drive #1 and replace it with the Report disk. If you do not switch the disks at this time, you will be prompted to do so after you make the menu selection.

To access the File Information routine . . .

CHOOSE: Option #11 File Info from the MENU SELECTION LIST. Press (RETURN).

The prompt <LOADING MODULE> will appear on the screen. The disk drive will whirr as the computer reads the data. You will then be asked:

DO YOU WANT OUTPUT TO PRINTER (Y/N)

If you want a printout of the file information, type Y; if not type N.

NOTE: If you have a printer and the printer card is *not* in slot 1 or your card requires special control characters to set the line width, see the Printer Control chapter for instructions.

After creating your data base, you are advised to make a printout of the file information and keep it for easy reference.

Do not enter Y if you do not have a printer. You will have to turn off the computer and begin the program again if you incorrectly indicate that you have a printer when you do not.

If you have a printer, turn it on and . . .

TYPE: Y (RETURN),

The report will be printed.

If you do not have a printer, respond N(O) to the prompt DO YOU WANT OUTPUT TO PRINTER . . .

TYPE: N (RETURN)

Or, you may simply . . .

TYPE: (RETURN)

If you do not have a printer, you are encouraged to copy this information from the screen onto a piece of paper. It is useful to have this information beside you when using other Data Factory routines.

The following screen will be displayed:

FILE INFORMATION		
BILLS TO BE PAID		
FIELD#	LENGTH	NAME
1	(25)	COMPANY NAME
2	(30)	STREET
3	(20)	CITY
4	(2)	ST
5	(5)	ZIP
6	(9)	AMT DUE (J)
7	(8)	BILL DAY

PRESS (RETURN)

File information, whether it is displayed or printed, provides information regarding your data base. You are told the number and name of each field in your data base. The name given to the entire data base is at the top. The numbers in parentheses, to the left of each field name, indicate the number of characters that you have allowed for that field. The (J) to the right of the field name tells you that you have established the field as a right justified one.

NOTE: If you are displaying data to the screen a maximum of eleven fields can appear at one time; press (RETURN) to view any remaining fields.

If you are making a printout of the information, all of the fields and the additional file information will be printed automatically. In all other ways, the printout corresponds to the screen display exactly.

After all of the fields have been displayed, press (RETURN) and you will see the following screen:

```
      *FILE INFORMATION*
      BILLS TO BE PAID
      MAXIMUM NUMBER OF RECORDS = 696
      TOTAL RECORDS USED = 0
      NUMBER OF VOLUMES = 1
      MAXIMUM RECORDS ON VOLUME 1 = 696
      PRESS (RETURN)
```

The above information is necessary to avoid Disk Full errors.

The first line indicates the maximum number of records allowed. This number is directly dependent upon the number and length of your data fields. The greater number of fields you have, the fewer records can be stored on disk. Likewise, the longer your fields, the fewer records can be stored.

If you need to enter more records than allowed, you may use the Reconfigure routine, Straight Transfer, to lower the length of the Maximum Sort Field. Although there is no guarantee, making this change may increase the number of records which can fit on the data base. (See the Reconfigure chapter, pages 185-195 for details).

The second line on the above screen indicates how many records you have used so far. Simply subtract this number from the number on the first line to find out how many more records you can enter.

The third line on the above screen indicates the number of volumes, or disks, you have used for this data base. You are limited to a maximum of two volumes and in some cases, you are limited to one volume. The Enter Data chapter explains how the number of volumes is determined.

The fourth line indicates how many records can fit on volume 1. If this number is the same as the first line, "maximum number of records," a second volume will not be used.

If you displayed the report to the screen, you will need to . . .

PRESS: (RETURN)

The MENU SELECTION LIST will be loaded and you will be able to choose another menu option.

You do not need to type (RETURN) to return to the MENU SELECTION LIST if you have made a printout of the file information.



ENTER DATA

You are now ready to enter data, thus creating records. Data Factory offers two ways to enter records.

- 1) You may use Standard Input if a simple vertical input format is adequate.
- 2) You can create your own Custom Input format, which can be helpful if you only need to enter information into some of the fields. Making a Custom Input format also allows you to label the fields with more descriptive and lengthy names than you were able to use when designating the fields. After creating a format you may save it for future use.

For the practice example, you will first enter data using Standard Input and later you will be shown how to create a Custom Input format and use that for data entry.

Standard Input Procedure

To use the ENTER DATA routine . . .

CHOOSE: option #1 Enter Data from the MENU SELECTION LIST . . .

TYPE: 1 (RETURN)

You will see the following screen:

SELECT ONE OF THE FOLLOWING:

1. STANDARD INPUT
2. MICRO LAB'S CUSTOM INPUT
3. RETURN TO MENU

WHICH?

CHOOSE: option #1 Standard Input...

TYPE: 1 (RETURN)

A <LOADING MODULE> prompt will be displayed for a few seconds and then you will see the following screen:

* STANDARD INPUT *

CURRENT NUMBER OF RECORDS = 0
VOLUME 1 WILL HOLD 696 MORE RECORDS

RECORD 1

1. COMPANY NAME - _____

2. STREET -
3. CITY -
4. ST -
5. ZIP -
6. AMT DUE -
7. BILL DAY -

(CTRL-A) REPEAT (CTRL-B) BACKUP
(CTRL-E) RESTART (CTRL-Q) QUIT

The Data Entry Screen

The first two lines provide general information regarding your data base.

Line one indicates the number of records already entered into the data base.

Line two indicates how many more records can fit on volume one.

Depending upon the size of your data base, a third line may appear. This line indicates how many more records can fit on volume two.

The size of your data base and the length of the sort field determines the number of volumes you can use. If your data base and sort field size are quite small, the total number of the records you are allowed to enter will fit on one volume. If this is the case, then the information line regarding the second volume will not appear, indicating that your data base requires only one volume.

The maximum number of records any file can have, regardless of field and record size, is 1500.

Below the record and volume information, is a list of the fields in your data base. To the right of each field name you can enter the appropriate data for the first record. Once one record is complete, an entry screen for the next record will appear.

NOTE: It is possible that all of your fields will not fit on one screen. Do not worry, if there are additional fields, another screen will appear after you enter the data into the fields currently being displayed.

Below the listing of the fields is a list of the available control keys. These control keys are used to make data input easier and to exit the routine.

To activate the control characters, press and hold the control key, located above the left hand shift key, and type the corresponding letter.

(CONTROL-A) is quite a timesaver. It allows you to repeat the *last entry* made in the field without retyping and then advances the cursor to the next field.

For example, you may be entering a series of addresses which are all in the city of Chicago. In the first record which needs to contain this entry, you will type the word "Chicago" into the field called CITY. When you enter data into the CITY field of the succeeding records, you can simply type (CONTROL-A) and the program will automatically enter "Chicago" into the field.

NOTE: Each time the Enter Data routine is first accessed, (CONTROL-A) will advance the cursor and leave the field blank. This is because there is no data in memory when you first enter the routine.

(CONTROL-B) moves the cursor to the previous field at which time you may enter new information. NOTE: After re-typing the data and pressing (RETURN), you can use (CONTROL-A) to advance the cursor over the subsequent fields while retaining the data they contain.

(CONTROL-E) positions the cursor at the first field of the current record.

(CONTROL-Q) returns you to the MENU SELECTION LIST *without* saving the record on which you are working.

If you want to leave a field blank, simply press (RETURN) without making an entry.

ENTER DATA PROCEDURE

Enter the following data into the first record:

FIELD #	FIELD NAME	DATA
1)	COMPANY NAME	SEARS
2)	STREET	1253 HARRISON
3)	CITY	SPRINGTOWN
4)	ST	IL
5)	ZIP	60000
6)	AMT DUE	350.00
7)	BILL DAY	01/01/83

NOTE: To perform a sort or search on the date field, it must contain six digits and the parts of the date must be separated by slashes, i.e., mm/dd/yy. If you are *not* planning on sorting or searching the date field, the date can have any format you desire.

Remember that if you make a mistake after you have pressed (RETURN) to accept the entry, press (CONTROL-B) to back-up. If you have not yet pressed (RETURN), simply use the left arrow key to back over the characters. To advance over fields while retaining the data they contain, type (CONTROL-A).

As soon as you have entered data into the last field and have pressed (RETURN), you will see the following prompt at the bottom of the screen:

```
                MEMORY CONTAINS 0 RECORDS
                MEMORY WILL HOLD 126 MORE RECORDS
SELECT          (N) NOT CORRECT
(M) TO MEMORY  (D) TO DISK
```

If you need to make changes to the data, enter **N**, for not correct. You will be returned to the top of the record. The cursor will appear over the first character of the first field.

You may use the the right arrow key to advance over characters, allowing you to keep part of the original entry and change part of it. The left arrow key moves the cursor back. After editing the field, use (CONTROL-A) to advance the cursor to the next field you need to edit.

After all of the changes have been made, continue to press (CONTROL-A) until the prompt re-appears, allowing you to save the record to memory or disk.

You are given the opportunity to store a number of records in memory before having the program write the information to disk. The prompt at the bottom of the screen tells you how many records can be stored in memory before the data must be stored to disk. If you do not want the program to take the time to write

to the disk after you complete each record, you may store the records in memory by typing **M**. At any time, you may choose to write all of the records in memory to disk by typing **D**.

NOTE: If you have entered the maximum number of records which can fit into memory, a prompt will appear asking if the record information is correct. Type **Y** (RETURN) if the record presently on the screen is in order. All of the records in memory will be written to disk.

CAUTION: Storing your data in memory rather than to disk, leaves the records vulnerable; if a power problem occurs, reset is accidentally pressed, or the computer is turned off, the data that is only in memory and has not been saved to disk, is **LOST**. Because records which are saved to memory are not permanently stored, do **NOT** turn off your computer until data is stored to disk and you have returned to the **MENU SELECTION LIST**.

For the practice example make certain that all of the data is in order and then . . .

TYPE: D (RETURN)

The record will be stored to disk.

Now, enter eight more of your own records to use during practice.

Try using both the **M** and **D** options to store different records.

When the screen for entering data into record 10 appears, do not enter any data . . .

TYPE: (CONTROL-Q)

The program will write any record data in memory to disk and will then return to the **MENU SELECTION LIST**.

EXITING THE PROGRAM

If you wish to take a break at this point, be certain that you have returned to the **MENU SELECTION LIST** and choose option #21 to exit. The following prompt will appear:

PLEASE INSERT BOOT DISK
INTO DRIVE 1
AND PRESS (RETURN)

If you wish to work with a different program, you may insert any Apple program disk which will "boot" the system. To boot the system, means to make it ready to function. After inserting such a program disk, press (RETURN). If you do not wish to use another program, you may turn off the computer.

When you wish to continue using the Data Factory program again, insert the Utility Disk into drive #1 and the Data disk into drive #2 and turn on the computer. See the section on Using The Data Base Each Day for further instructions.

NOTE: If you fill one volume and can go on to a second volume, the program will write all of the records presently in memory to the first volume. You will be prompted to insert a blank disk into drive #1 for use as the second volume. The second disk will be initialized and the record you just entered will be written to the second volume.

SUMMARY

Use option #1 Enter Data, to enter data into records. You are given the opportunity to enter data into a Standard Input format or a Custom Input format which you design yourself.

Entering data is a simple procedure. Enter the data for each field and use the command keys appearing on the bottom of the screen to control cursor movement and to move between fields. These keys are explained in detail in the body of this chapter.

See the next chapter for instructions on designing a Custom Input format.



SUMMARY OF COMMANDS

KEY	FUNCTION
I. ENTERING RECORD DATA	
CONTROL-A REPEAT	Repeat previous field entry
CONTROL-E RESTART	Move cursor to first field of record
CONTROL-B BACK UP	Move cursor to previous field
CONTROL-Q QUIT	Return to MENU SELECTION LIST without saving current record
II. SAVING RECORD DATA	
M TO MEMORY	Store data in memory only – data is not protected
N NOT CORRECT	Edit data in record – cursor moves to field 1
D TO DISK	Store data to disk – if other records are in memory they too will be saved to disk.



INPUT EDITOR

CUSTOM INPUT

There are two routines involved in Custom Input:

- 1) Input Editor, used for designing your format
- 2) Enter Data, used for entering data into your Custom Input format.

Although you may always use the Standard Input format to enter data, you may want to create your own Input format. Creating your own format allows you to display only the names of the fields you wish to use, leaving other field information to be entered later if necessary. You may also enter field names which are longer than the field length, making your Input format easier to interpret.

NOTE: The formats you create during this routine can only be used for DATA ENTRY. Output formats and editing formats are created within their own routines.

If you design an Input format which does not use all of the fields of your data base, remember that your Input format and record data are stored separately. When you want to enter information into fields which are not contained on your Custom Input format, you can access the appropriate record and then enter the remaining information. The records can be accessed using any of the editing routines.

DESIGNING A FORMAT

When you begin to create an Input format, the screen is blank. You must position each field name and each field entry line. You must also type in each field name and any other constants you wish to have on your format.

Your best strategy for creating a format is drawing a picture of how you want the format to look.

Your practice format will look like this:

DATE DUE: _____

COMPANY NAME: _____

ADDRESS: _____

CITY/STATE: _____, _____

ZIP: _____

AMOUNT DUE: \$ _____

INPUT EDITOR PROCEDURE

CHOOSE: option #8 Input Editor, from the MENU SELECTION LIST.

The following prompt will appear:



LOAD FORMATS DISK INTO DRIVE 2 AND
PRESS 'RTN'

Label a blank initialized disk, Format disk, and insert it into the drive. If you have already created a Format disk, you may use that one.

PRESS: (RETURN)

You are advised to keep your Custom Input format on a separate disk, so that you do not use valuable record storage space on the Data disk.

After you insert the Format disk, the following menu will appear:

CUSTOM INPUT EDITOR

SELECT FORMAT

1. CREATE A NEW FORMAT
2. CONTINUE WITH MORE FORMATS
3. CATALOG ANOTHER DISK
4. RETURN TO MENU

SELECT (1-4)

If you had already created formats, the format name would have appeared on the menu, followed by .CIF and you would have been able to edit that format. The above options would have been renumbered accordingly.

This set of options, including any available formats, is called the SELECT FORMAT MENU. This menu appears in many of the routines and the four options presently on the menu always have the following function:

Option #1 allows you to create a format.

Option #2 is used when there are already formats saved on the disk. If all of the format names cannot fit onto the screen, this option allows you to view the remaining format names.

Option #3 allows you to insert another Format disk and use one of the formats on that disk.

Option #4 returns you to the MENU SELECTION LIST.

CHOOSE: option #1 to create a new format. Press (RETURN).

The options now displayed on your screen have the following function:

I,J,K,M – Move the cursor to indicate placement of a constant or a field on the monitor.

I - Up
M - Down
J - Left
K - Right

A - Add something to the format

D - Delete the entry currently at the cursor position.

SHIFT M - Move an entry to a different position on the screen.

] - Move an entry to a different position on the screen when **using the Apple IIe computer.**

CTRL-Q - Quit and save the format to the disk.

<- and -> Page backward and forward. If you have many fields in your data base, your Input format will need to have more than one "page." A page is equivalent to one screen and can contain 23 lines. You can have up to 25 pages per format.

H - Help, displays the above commands.

NOTE: Remove the Summary of Commands from the end of the chapter and keep it beside you while you are designing the format.

After looking over the options . . .

PRESS: (RETURN)

You are now ready to create a screen format.

CREATE A FORMAT

The cursor is blinking at the top, left corner of the monitor. This cursor determines where the constant or field will be placed.

Move the cursor around by pressing the I, J, K and M keys to get a feel for the movement. Since the cursor is already at the upper left most position on the screen, use the K and M keys first.

CAUTION: The cursor is *not* moved with the arrow keys. The arrow keys page backward and forward. If, while you are designing the format, you accidentally press the right arrow key, the screen will clear allowing you to enter information onto the

next page. If you want to return to the first page, press the left arrow key.

Once you have moved the cursor around the screen, reposition it at the top left corner. This is where you will enter the field label, COMPANY NAME.

First, you must indicate to the program that you wish to make an entry.

TYPE: A [Do not type (RETURN)]

The following prompt will appear at the bottom of the screen.

ADD (D)ATA, (C)ONSTANT, OR E(X)IT?

D - indicates to the program that you wish to enter a field for data entry. You can have a maximum of 100 data entries.

C - indicates that you wish to enter a constant. A constant is a title or label you wish to appear on the screen to prompt the person who is going to enter data as to which data to enter. You can use a constant as a prompt or to enter text directly. You can enter a maximum of 150 strings of constants. The left arrow key can be used as usual to back up and correct typing mistakes when typing constants.

In the following example, you will be alternating between entering constants and data. First, set up a descriptive term or label, this is a constant. Type A and C and then type in the constant. Next, you will set a place holder, or entry blank, for a particular field. This is done by typing A and then D, and then entering the corresponding field number. Remember that the field number was assigned when the data base was first established.

To indicate that you wish to enter a constant . . .

TYPE: C [Do not type (RETURN)]

The following line will appear at the bottom of the screen:

INPUT TEXT:

TYPE: COMPANY NAME: (RETURN).

After you press (RETURN) the entry will appear at the position of the cursor.

Positioning the fields is done in the same manner as positioning constants.

Using the K key, MOVE the cursor to the right of the constant COMPANY NAME: and leave one space. The cursor will pass over the letters in the constant.

To indicate that you wish to add something to the format . . .

TYPE: A

To indicate that you wish to add a data field . . .

TYPE: D

There should now be a prompt at the bottom of the screen which reads:

WHICH DATA FIELD #000.

Enter the number corresponding to the field you wish to appear.

The field you want for the example (field #1) . . .

TYPE: 1 (RETURN)

A dotted line will appear at the cursor position. The length of the line equals the field length.

REMEMBER: You are not going to be entering data in this routine you are simply creating the form into which data can be entered later. The line which appears next to the constant is a place holder.

Your screen should now look like this:



COMPANY NAME:

If the constant or field is correct, but you wish to change its position on the screen, move the cursor to the beginning of the entry; hold down the SHIFT key and press M. (If you are using the IIe, or III in emulation, press the] key.) Move the entry to the desired position by using the I, J, K and M keys.

First you will move the constant and then you will move the field line.

For the example, position the cursor over the C of COMPANY NAME.

TYPE: (SHIFT-M) or]

The following line will appear at the bottom of the screen:

POSITION CURSOR AT NEW LOC & HIT RETURN

To move the cursor down three lines . . .

TYPE: MMM

PRESS: (RETURN)

The CONSTANT will move to the cursor position.

Next, position the cursor on the first dot of the DATA FIELD ENTRY LINE. Follow the above procedure, and move the entry line down three lines. (Use the M key to move the line down.)

NOTE: If you need to correct an error, place the cursor over the first character of the constant or over the first dot of the field. Press D to delete the entry. Enter the correct information.

After the COMPANY NAME line has been repositioned, you will enter a constant and field line for the date.

Move the cursor seven spaces in from the top left edge of the screen.

TYPE: A

then . . .

TYPE: C

TYPE: DATE DUE: (RETURN)

Position the cursor one space to the right of the constant. (Use the K key)

Enter the field by doing the following:

TYPE: A

TYPE: D

TYPE: 7 (RETURN)

Your screen should now look like this:

DATE DUE:
COMPANY NAME:

The following table tells you what to enter for the remaining fields. Each time an entry appears on the screen, remember to reposition the cursor for the next entry. Position the cursor so that your format matches the planned design.

ENTRY TYPE	FIELD OR CONSTANT
A,C	ADDRESS:
A,D	2
A,C	CITY/STATE:
A,D	3
A,C	,
A,D	4
A,C	ZIP CODE:
A,D	5
A,C	AMOUNT DUE:
A,D	6

When you finish, your format should look like this:

DATE DUE:

COMPANY NAME:

ADDRESS:

CITY/STATE:, ..

ZIP CODE:

AMOUNT DUE:

When your format looks correct...

PRESS: (CONTROL-Q) CTL-Q

The following prompt will appear reminding you that a Format disk should be in drive #2:

LOAD FORMATS DISK INTO DRIVE 2
AND PRESS 'RTN'

When you are certain that a Format disk is in the drive, press (RETURN).

Next, you need to name the format:

WHAT DO YOU WANT TO CALL YOUR
FORMAT? _____

TYPE: PAYMENTS DUE (RETURN)

The format will be written to disk.

The following prompt will appear:

LOAD DATA DISK INTO DRIVE 2
AND PRESS 'RTN'

Insert the Data disk into drive 2 and...

PRESS: (RETURN)

The MENU SELECTION LIST will be displayed after the Data disk has been loaded.

EDITING CUSTOM FORMATS

To edit the format, return to the Input Editor routine . . .

CHOOSE: option #8 Input Editor on the MENU SELECTION LIST. Press (RETURN).

When prompted, place the Format disk, containing the format you wish to edit, into drive #2.

The SELECT FORMAT menu will appear, the Custom Input formats contained on the disk will appear on the menu.

ENTER: the option number corresponding to the format you wish to edit.

For the example . . .

ENTER: the number which corresponds to the PAYMENTS DUE format.

The format you created will appear on the screen. You can make additions, deletions or corrections to the format.

The command keys and direction keys are the same as for creating a format, i.e., the D key deletes an entry, the A key allows you to add to the format, shift M (or] on the Apple IIe) allows you to move an entry.

HINT: You can set up or edit your Custom Input format so that later, when you are entering data, helpful prompts will appear at the bottom of your screen. These prompts can list the keys to be used and a few words describing what they do. The prompts will not appear on your reports or on the screen in the editing routines.

After the changes have been made, press CTRL-Q to save the format.

The following prompt will appear:

```
LOAD FORMATS DISK INTO DRIVE 2  
AND PRESS 'RTN'
```

Check that the Format disk is in the drive and . . .

PRESS: (RETURN)

The following prompt will appear:

(S)AVE AS PAYMENTS DUE
OR (R)ENAME

If you type S and (RETURN), the new format will be saved on your FORMATS disk, replacing the old format file.

If you type R and (RETURN), the following prompt will appear on your screen:

WHAT DO YOU WANT TO CALL
YOUR FORMAT? _____

When the above prompt appears . . .

ENTER: The new format name. Press (RETURN).

NOTE: When you choose to rename the format, and type in a different name from the original, the program creates a new format under that name. The original, unedited format will also remain on the disk.

Because you do not need to rename the format at this time . . .

TYPE: S (RETURN)

Next, you will be prompted to . . .

LOAD DATA DISK INTO DRIVE 2
AND PRESS 'RTN'

Remove the Format disk from the drive and replace it with the Data disk. After the Data disk has been loaded, you will be returned to the MENU SELECTION LIST.

ENTER DATA PROCEDURE

In order to enter data into your Custom Input format . . .

CHOOSE: option #1 Enter Data from the MENU SELECTION LIST.

The following menu will appear:

```
SELECT ONE OF THE FOLLOWING:  
1. STANDARD INPUT  
2. MICRO LAB'S CUSTOM INPUT  
3. RETURN TO MENU  
  
WHICH?
```

CHOOSE: option #2 Micro Lab's Custom Input to use one of your Custom Input formats. Press (RETURN).

The <LOADING MODULE> prompt will be displayed.

The following screen will appear:

```
* CUSTOM INPUT *  
  
CURRENT NUMBER OF RECORDS = 9  
VOLUME 1 WILL HOLD 687 MORE RECORDS  
  
PLEASE INSERT  
FORMAT DISK  
INTO DRIVE 2  
AND PRESS (RETURN)
```

Place the disk, containing the format you wish to use, into drive #2 and . . .

PRESS: (RETURN)

The following menu will appear:

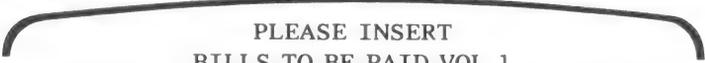
```
CUSTOM INPUT .FORMAT SELECT
1. PAYMENTS DUE .CIF
2. CONTINUE WITH MORE FORMATS
3. CATALOG ANOTHER DISK
4. RETURN TO MENU
SELECT (1-4)
```

Had there been other Custom Input formats on the disk, they too would be displayed on this menu. The last three options would have been renumbered accordingly.

The suffix .CIF is added to the format name so that the computer can distinguish Custom Input formats from other types of formats you may save on the disk.

CHOOSE: option #1 Payments Due.CIF to use the Payments Due format.

The following prompt will appear:



PLEASE INSERT
BILLS TO BE PAID VOL 1

INTO DRIVE 2
AND PRESS (RETURN)

Place the BILLS TO BE PAID, Data disk into drive #2 and . . .

PRESS: (RETURN)

The first page of your Input format will be displayed on the screen. (In the example there is only one page.)

Although a list of control keys is not at the bottom of the screen, the following control keys can be used when entering data. Use these keys to control the movement of your cursor from field to field; to move from page to page; to repeat a field entry in the next record; and to exit the routine.

(CONTROL-A) allows you to repeat the last entry made in a field without retyping and then advances the cursor to the next field.

For example, you may be entering a series of addresses which are all in the city of Chicago. In the first record which needs to contain this entry, you will type the word "Chicago" into the field called CITY. When you enter data into the CITY field of the succeeding records, you can simply type (CONTROL-A) and the program will automatically enter "Chicago" into the field.

NOTE: Each time the Enter Data routine is first accessed, (CONTROL-A) will advance the cursor and leave the field blank. This is because there is no data in memory when you first enter the routine.

(CONTROL-B) moves the cursor to the previous field, at which time you may enter new information. NOTE: After re-typing the data and pressing (RETURN), you can use (CONTROL-A) to advance the cursor over the subsequent fields while keeping the data they contain.

(CONTROL-D) returns to the previous page of the Input format.

(CONTROL-E) advances to the next page of the Input format.

(CONTROL-Q) quits data entry. The record presently displayed will *not* be saved.

The ARROW KEYS are used to page forward and backward.

The cursor is waiting for input at the beginning of the first field. Make the following entries:

FIELD LABEL	DATA
DATE DUE:	03/01/84
COMPANY:	VISA
ADDRESS:	BOX 324
CITY:	CHICAGO
STATE:	IL
ZIP:	60626
AMOUNT DUE:	300.00

NOTE: Be certain to press (RETURN) after entering CHICAGO and before entering IL. Even though the two fields appear on the same line in the format; they are still separate fields.

NOTE: If during INPUT EDITOR you have created another page, by pressing the arrow key, that page will be displayed.

Even if you pressed the arrow key by mistake, and have not entered any fields or constants onto that page, that page will appear during ENTER DATA. If there is nothing on the second page, the prompt: HIT ANY KEY TO CONTINUE will appear. Press any key to skip this blank page, e.g., press (RETURN). If there are other pages they too will be displayed.

Once you have viewed every page and entered any necessary information the record will be saved to disk automatically.

When the next screen appears, the data from the previous record will be displayed. You can write over this information, entering new record data, or you may keep the data by pressing CTRL-A.

When you no longer wish to enter records, press CTRL-Q to exit the routine.

SUMMARY

Custom Input involves two routines: Input Editor and Enter Data. Use Input Editor to design a screen which makes data entry fast and easy. Then use Enter Data to enter information into the format, thus creating records.

When you create a data base, the field names are limited to the length of the field. It is therefore common to abbreviate the field names. You can overcome this limitation in Custom Input by labeling each field with a constant of any length. Furthermore, with Custom Input you can have the fields displayed in any order. You are not confined to the order in which you entered the fields at the time you created your data base.

To create a format, choose option #8 Input Editor from the MENU SELECTION LIST. Press (RETURN) after the help screen appears. Use the I, M, J and K keys to move the cursor to the desired position. Enter an A to indicate that you wish to add something to the format. Then, enter a C to add a constant or a D to enter a field line for entering data.

See the body of the chapter for an explanation of the other command keys used with this routine.

After you have finished designing the format, use the Enter Data routine, MENU SELECTION LIST option #1.

SUMMARY OF COMMANDS

KEYS	FUNCTION
I MOVE CURSOR	Move cursor up
M MOVE CURSOR	Move cursor down
J MOVE CURSOR	Move cursor left
K MOVE CURSOR	Move cursor right
A ADD DATA OR CONSTANT	Add to the format
D DATA	Add a data field, place holder
C CONSTANT	Add a constant
X EXIT	Exit routine and save the format
D DELETE CURRENT DATA	Delete the entry currently at the cursor position
SHIFT M MOVE ITEM	Move an entry to a different position on the screen
] MOVE ITEM on Iie	Move an entry to a different position on the screen when using an Apple Iie
CTRL-Q QUIT	Quit and save the format to the disk
<- and -> PAGE	Page backward and forward. If you have many fields in your data base, your Input format will need to have more than one "page." A page is equivalent to one screen and can contain 23 lines. You can have up to 25 pages per format.
H HELP	Help, displays the above commands



INSPECT/CHANGE

To change data on one or more records, use the Inspect/Change routine, option #2 on the MENU SELECTION LIST. This routine allows you to select the records you wish to review and make any necessary changes to the data in those records.

There are two other routines which can be used for editing: Update and Replace. Update allows you to display only those fields which need editing. Replace allows you to automatically make the same change to every one of the selected records.

The Inspect/Change routine requires very few preliminary instructions and should be used when you wish to review records and/or make different kinds of changes to each of the selected records.

INSPECT/CHANGE PROCEDURE

To enter the Inspect/Change routine . . .

CHOOSE: option #2 Inspect/Change from the MENU SELECTION LIST. Press (RETURN).

The <LOADING MODULE> prompt will be displayed and then you will see the following menu:

```
* INSPECT/CHANGE *  
1. SELECTED RECORDS  
2. 'ENTRY' SEARCH  
3. SURVIVOR LIST  
4. RETURN TO MENU  
  
SELECT (1-4)
```

This set of options appears in a number of the Data Factory routines and will always be referred to as the RECORD SELECTION MENU.

You have the option of inspecting every record or a select group of them. There are a variety of ways to indicate which records you wish to review.

Using option #1, you choose the records you wish to view by entering the corresponding record numbers. You may select a single record, a range of records, or all of the records.

Option #2 allows you to search for a particular entry in one of the fields and view only those records which contain that entry. For example, if you know that the record you need to inspect has SPRINGTOWN in the CITY field, you can perform an entry search. All records with SPRINGTOWN in the CITY field will be displayed.

Option #3 is used in conjunction with the Master Search and the List/Report routines discussed later in the manual.

SELECTED RECORDS

CHOOSE: option #1 Selected Records from the RECORD SELECTION MENU. Press (RETURN).

The following prompt will appear:

```
SELECT RECORDS (0-10)
PRESS (RETURN) TO TERMINATE
SELECTION
1 --->
```

NOTE: The record range in the first line will vary depending upon the number of records you have created.

You may select records by entering a series of single record numbers or a range of numbers.

If, for example, you wanted to review or edit the first and sixth records you entered, you would type 1 and press (RETURN), and then type 6 and press (RETURN).

You may also enter a range of records to be displayed. For example, if you wanted to view records 2, 3, 4, and 5 you would enter 2-5 and press (RETURN).

There is a great deal of flexibility in this routine. For example, you may indicate a range of records, press (RETURN) and then enter a single record number. All of the records included in the range as well as the single record will be displayed.

To practice . . .

TYPE: 1-4 (RETURN)

The following line will appear on the screen:

5 ---->

The number on this entry line (5) depends upon how many records you have selected in your first entry. Since there are *four* records specified in the first entry, the second entry line is five (5).

You may now enter other record numbers.

TYPE: 7 (RETURN)

The next entry line will read:

6 ---->

Indicating that you are about to enter the sixth record number. You have entered a total of five record numbers so far.

TYPE: 9 (RETURN)

The next entry line will read:

7 ---->

To indicate that you have finished entering records . . .

TYPE: (RETURN)

The following prompt will appear:

ALL CORRECT (Y/N)

If you have made the correct selections . . .

TYPE: Y (RETURN)

Otherwise . . .

TYPE: N (RETURN)

When you enter N, your previous entries will be erased and you must reenter all of the correct entries.

When all of the entries are correct and you answer Y to the prompt, the selected records will be displayed individually.

In the example, records 1, 2, 3, 4, 7, and 9 will be displayed one at a time.

The program will not allow you to enter a number greater than the number of records currently in your data base.

If you enter every record in the data base, including record 0, the ALL CORRECT Y/N prompt will appear automatically.

The Editing Screen

Your screen should now display the following information for record #1:

```

* INSPECT/CHANGE *
RECORD 1
1. COMPANY NAME - SEARS
2. STREET - 1253 HARRISON
3. CITY - SPRINGTOWN
4. ST - IL
5. ZIP - 60000
6. AMT DUE - 350.00
7. BILL DAY - 01/01/83
PRESS (1-7) TO CHANGE OR
(C) CONTINUE (E) RESTART (R) REVIEW
(S) SKIP      (Q) QUIT

```

Notice the three lines of prompts at the bottom of the screen.

The first line indicates that you may change the data in any field by entering the number of the field you wish to edit.

The next two lines, with letters in parentheses, tell you what keys to use to control movement between records.

NOTE: Any changes you make before pressing one of the command keys will be saved.

The command keys have the following function:

C – Continue with any additional fields. If there are no more fields in the present record, the next selected record will appear. If there are no more records, you will return to the RECORD SELECTION MENU.

R – Review the first screen of fields. If there is only one screen of fields per record, the same screen will remain on the monitor.

E – Return to the RECORD SELECTION MENU, enabling you to choose another set of records to edit.

S – Skip to the next record. If there is a second screen of fields, you will *not* see those fields before the next record is displayed.

Q – Quit the routine and go back to the MENU SELECTION LIST.

NOTE: Once you have advanced to the next record, you cannot return to the previous record.

EDIT DATA

For the practice example, you will change the data in field #7 of record #1 . . .

TYPE: 7 (RETURN)

Notice the PRESS (CTRL-A) TO REPEAT prompt which appears at the bottom of the screen. If you have decided not to change the selected field entry you may press (CONTROL-A) rather than retype the entry. If you press (RETURN) rather than (CONTROL-A, the entry will be ERASED.

The cursor is positioned over the first character of field #7 and you are now able to change the entry.

TYPE: 01/30/84 (RETURN)

NOTE: The left and right arrow keys may be used to advance over characters in a field, allowing you to keep part of the original entry while changing another part.

REMINDER: After you have edited the fields which appear on the screen, you can type **C** (RETURN), any remaining fields for that record will be displayed. If all of the fields have been displayed, the next record will appear. You can edit the fields on the second screen in the same manner as those on the first. After working with the second screen, you can return to the first screen of fields by typing **E** (RETURN).

Rather than viewing and editing the other records . . .

TYPE: **E** (RETURN)

The RECORD SELECTION MENU will appear on the screen. You are now ready to learn about performing an entry search.

ENTRY SEARCH

To perform an entry search . . .

CHOOSE: option #2 Entry Search from the RECORD SELECTION MENU.

The following prompt will appear:

PRESS (F) TO VIEW FIELDS
FOUND IN WHICH FIELD (1-7)

The first line of this prompt indicates that you can type the letter F, if you do not remember the number which corresponds to the field you wish to search. When you type **F** (RETURN), a screen containing a list of fields and numbers will appear.

To see the listing at this time . . .

TYPE: F (RETURN)

Your screen should look like this:

* INSPECT/CHANGE *		
FIELD#	LENGTH	NAME
1	(25)	COMPANY NAME
2	(30)	STREET
3	(20)	CITY
4	(2)	ST
5	(5)	ZIP
6	(9)	AMT DUE (J)
7	(8)	BILL DAY

PRESS (RETURN)

After you find the appropriate field, note the desired field number and press (RETURN).

For the practice example, you will search the CITY field. Note that the corresponding field number is three (3) and then ...

TYPE: (RETURN)

The following prompt will appear at the top of the screen:

PRESS (F) TO VIEW FIELDS
FOUND IN WHICH FIELD (1-7)

The second line of this prompt is telling you to enter one of the field numbers as the field you wish to search.

To indicate that you want to search field #3 (CITY) ...

TYPE: 3 (RETURN)

The following prompt will appear:

ENTER ITEM TO SEARCH FOR

This prompt is asking you to enter the item of information you want the program to find. Note that the length of the blank line in this prompt equals the field length.

TYPE: SPRINGTOWN (RETURN)

NOTE: If you are using the Apple IIe, and you used upper and lower case when entering data, be certain that the entry for which you are searching matches the case type exactly.

After entering the search item, you will see the following screen:

```
* INSPECT/CHANGE *  
SELECT SEARCH TYPE  
1. FULL  
2. PARTIAL  
3. SUBSTRING  
SELECT (1-3)
```

At this time the program is asking you to indicate how much of the entry item needs to match the data in the field:

FULL - Only those records in which the *entire* field exactly matches the entry will be displayed. NOTE: Before choosing a FULL search type, be certain that when you entered the search item, you typed the entire entry *exactly* as it will appear in the field. For example, if you were searching records for the word SPRINGTOWN, you would have to have entered the entire word as the search item.

PARTIAL - Records in which the *beginning* of the field entry matches the constant will be displayed. For example, if you were looking for the word SPRINGTOWN you could have entered S, SPR, SPRING, *etc.* as the search item. NOTE: If your search

item was SPRING, the program would also display any record containing the entry SPRING FALLS, SPRING TIME, *etc.*

SUBSTRING – Records in which *any part* of the field entry matches the constant will be displayed. Using the above example, your search item could be S, R, RING, TOWN, SPRING, *etc.*
NOTE: If your search item was SPRING, the program would also display any records containing the entry SILVER SPRING, SPRING FEVER, *etc.*

In the practice example, you entered the search item as SPRINGTOWN so you can perform a FULL search.

CHOOSE: option #1 Full. Press (RETURN).

The computer will search every record and display the ones which have SPRINGTOWN in field #3.

Each record which fulfills the criteria will be displayed.

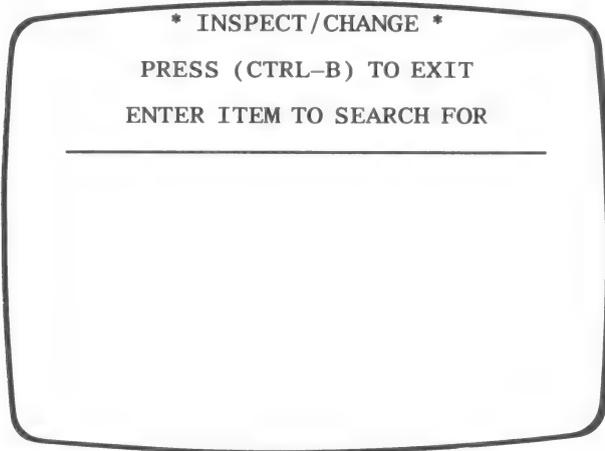
Because the practice record (record #1) contains SPRINGTOWN in field #3, the record will be displayed.

You are now ready to edit the data contained in that record.

You may edit the record in the manner discussed in the previous Edit Data section.

All but one of the command keys at the bottom of the Edit Screen have the same function as discussed in the previous section. The command key **E** has a slightly different function.

After pressing E to RESTART, the following screen will appear:



This prompt is allowing you to search the same field for a different entry. You could for example, search field #3 for the entry NEW YORK. You would simply type the desired entry, e.g., NEW YORK, and press (RETURN). The program will search field #3 for the new item and display the records containing that entry.

If you wish to choose another method of record selection (Survivor List or Selected Records), or you wish to perform an entry search on a different field you should type (CONTROL-B) and you will be returned to the RECORD SELECTION MENU.

For the practice example . . .

TYPE: (CONTROL-B)

EDITING FIELD INFORMATION

Using the Inspect/Change routine you can edit some of the field information. You can change the field names and the justification option. You will not be able to use this routine to change the field length, if you need to do this, see the Reconfigure chapter.

To inspect the field information while in the Inspect/Change routine . . .

CHOOSE: option #1 Selected Records from the RECORD SELECTION MENU. Press (RETURN).

The program automatically stores the field information in RECORD 0; therefore you should . . .

TYPE: 0 (RETURN)

Then, to indicate that you have finished your record selection . . .

TYPE: (RETURN)

The ALL CORRECT (Y/N) prompt will appear and you should . . .

TYPE: Y (RETURN)

Record 0 will be displayed with the present field names appearing in the place of data.

The screen will look like this:

```

* INSPECT/CHANGE *
RECORD 0
1. COMPANY NAME - COMPANY NAME
2. STREET - STREET
3. CITY - CITY
4. ST - ST
5. ZIP - ZIP
6. AMT DUE - AMT DUE
7. BILL DAY - BILL DAY
PRESS (1-7) TO CHANGE OR
(C) CONTINUE (E) RESTART (R) REVIEW
(S) SKIP      (Q) QUIT

```

To change one of the field names, enter its corresponding field number and then enter the new name.

To practice . . .

TYPE: 7 (RETURN)

Note the prompt at the bottom of the screen; if you no longer wish to change the entry, press (CTRL-A) and the original entry will reappear.

For the example . . .

TYPE: DUE DAY (RETURN)

The following prompt will appear at the bottom of the screen:

JUSTIFY FIELD (Y/N)

Indicate whether or not the field should be justified. Remember that only fields into which you will be entering numbers need to be justified.

Field #7 does not need to be justified . . .

TYPE: N (RETURN)

The new field name will replace the old one.

You may change as many of the field names as you like. To stay consistent with the practice example, do not make any more changes at this time.

When you have finished viewing and editing the field information . . .

TYPE: E

The RECORD SELECTION MENU will appear.

Return to the MENU SELECTION LIST by choosing option #4 from the RECORD SELECTION MENU.

SUMMARY

Using the Inspect/Change routine to edit records enables you to access selected records and make unique changes to each one of those records. This routine can also be used to change some of the field information.

Option #2 Inspect/Change on the MENU SELECTION LIST accesses this routine.

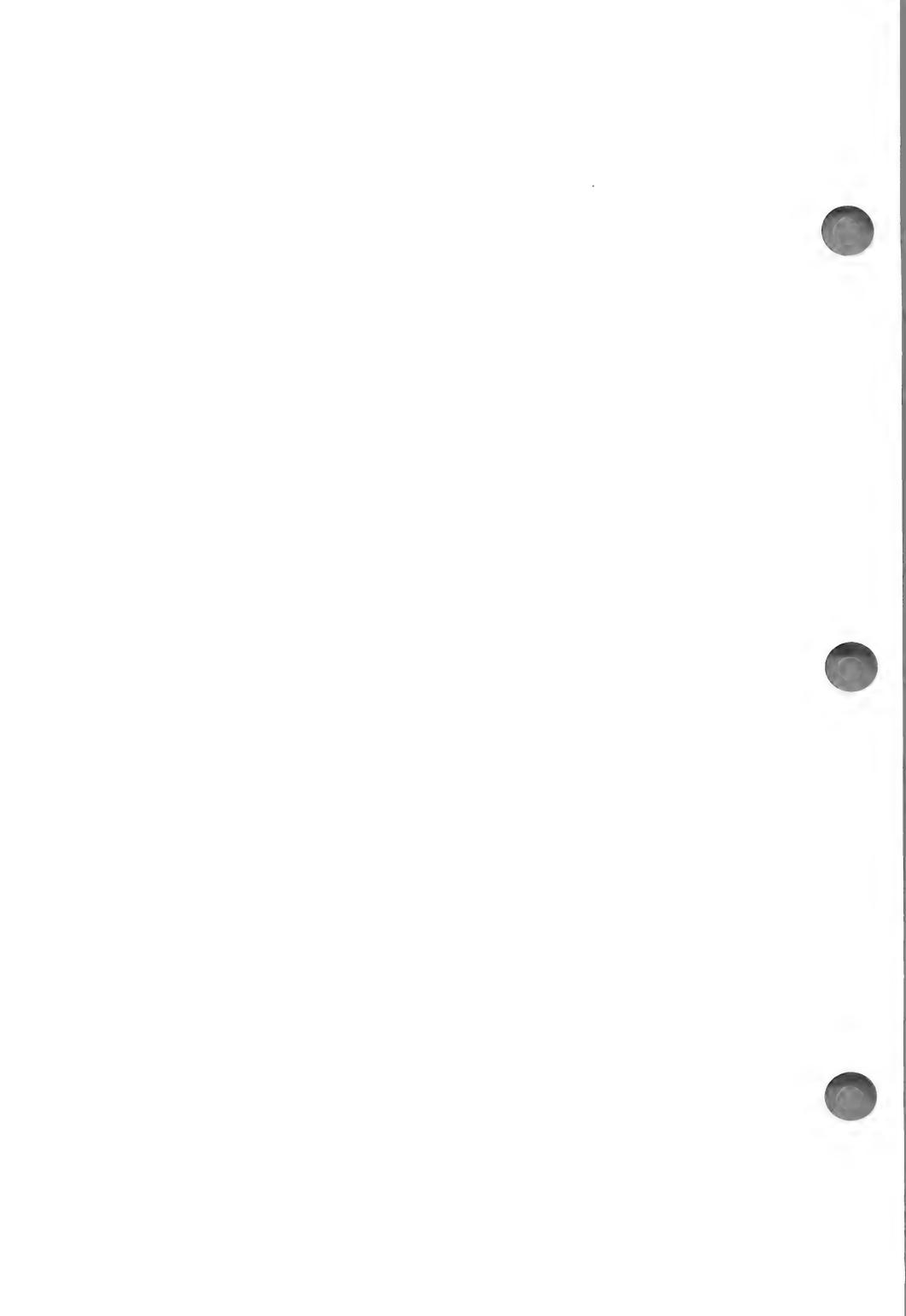
You have the option of selecting the records you want to use with this routine by entering record numbers or by searching for a particular entry. You may also work with the records in the Survivor List.

After selecting the desired records, each record will be displayed individually and you will be able to edit the data. The keys at the bottom of the screen allow you to advance through the records.

You may also use the Inspect/Change routine to edit some of the field information. Select record 0 and you will be able to edit the field name and justification. You will not be able to change the field length. See the Reconfigure chapter if you wish to change the field length.

SUMMARY OF COMMANDS

KEYS	FUNCTION
FIELD #	Enter the number of the field you wish to edit
C CONTINUE	Continue with more fields or the beginning of next record
S SKIP	Skip to beginning of next record
R REVIEW	Return to beginning of current record
E RESTART	Return to RECORD SELECTION MENU or you can enter a new search item
Q QUIT	Return to MENU SELECTION LIST



UPDATE

The Update routine displays selected fields of specified records for editing. This is a very efficient way to change data in a few fields in all or some of your records. For example, to update the data in the AMT DUE (field #6) and DUE DAY (field #7), you would select the records you wished to edit and then choose to display fields six and seven. The data currently in those fields will be displayed and you can edit that data.

HINT: If you have added fields to your data base through the Reconfigure routine, you can enter data into the new fields by using the Update routine.

NOTE: You will use the Format disk for this routine.

UPDATE PROCEDURE

CHOOSE: option #4 Update from the MENU SELECTION LIST. Press (RETURN).

The following prompt will appear:



PLEASE INSERT
FORMAT DISK
INTO DRIVE 2
AND PRESS (RETURN)

The Format disk is used to store the selected field numbers, saving this information for future use. This will save you from having to re-enter the field numbers the next time you use the Update routine.

You are advised to keep the format information on a separate disk so that you do not use valuable space on your Data disk. On this disk, you can keep a variety of Update, Input and Output formats.

INSERT: a blank *initialized* disk to use as your Format disk; if you have already used a Format disk in another routine, you may use that disk.

After inserting the disk . . .

PRESS: (RETURN)

The following menu will appear:

```
          * UPDATE *  
1. CREATE A NEW FORMAT  
2. CONTINUE WITH MORE FORMATS  
3. CATALOG ANOTHER DISK  
4. RETURN TO MENU  
SELECT (1-4)
```

NOTE: Had you already created Update formats, each format name would appear as an option. You could then choose to use one of those formats or create a new one. The Update format names will be followed by a -U.

For the example . . .

CHOOSE: option #1 Create a New Format. Press (RETURN).

The following prompt will appear:

```
          _____  
          SELECT FIELDS (1-7)  
          PRESS (RETURN) TO TERMINATE SELECTION  
          PRESS (F) TO VIEW FIELDS  
          1 ---->
```

NOTE: If there had already been Update formats saved and you chose to work with one of those previously created formats, the above prompt would not have appeared. The RECORD SELECTION MENU would appear immediately.

The above prompt is asking you to indicate which fields you want to update. You may enter one or more field numbers as well as ranges of numbers.

To see the numbers of the fields press "F" and the fields will be displayed.

For the example . . .

TYPE: 6-7 (RETURN)

The screen should now look like this:

```
      * UPDATE *
      SELECT FIELDS (1-7)
      PRESS (RETURN) TO TERMINATE SELECTION
      PRESS (F) TO VIEW FIELDS
      1 ---->6-7
      3 ---->
```

The number on the second entry line (3) depends upon how many fields you have selected in your first entry. Since there are *two* fields specified in the first entry, the second entry line is three (3).

NOTE: You may enter as many fields as are contained in the data base. The field numbers can be entered in any order you wish. The order in which you enter the numbers determines the order in which the fields will appear.

You only need to enter those fields which need editing. The entire record can be viewed prior to data entry, ensuring that you are entering data into the correct record.

To indicate that you do not have any more field numbers to enter . . .

PRESS: (RETURN)

The ALL CORRECT (Y/N) prompt will appear. If everything is in order . . .

TYPE: Y (RETURN)

Otherwise . . .

TYPE: N (RETURN)

Enter your field choices correctly.

After you have entered the desired choices . . .

TYPE: Y (RETURN)

The following prompt will appear:

SAVE THIS FORMAT (Y/N)

The set of field choices you have entered constitutes an Update format and can be saved for future use, by entering Y to this prompt.

For the example . . .

TYPE: Y (RETURN)

The following prompt will appear:

ENTER FORMAT NAME

Choose a format name that is descriptive of the type of update you can do with this format.

For the example . . .

TYPE: AMOUNT AND DATE (RETURN)

After you have created the format, you will see the following prompt.

PLEASE INSERT
BILLS TO BE PAID VOL 1
INTO DRIVE 2
AND PRESS (RETURN)

Place the Data disk into drive #2...

PRESS: (RETURN)

You will see the RECORD SELECTION MENU:

* UPDATE *
SELECT RECORDS
1. SELECTED RECORDS
2. 'ENTRY' SEARCH
3. SURVIVOR LIST
4. SELECT/CREATE A NEW FORMAT
5. RETURN TO MENU
SELECT (1-5)

This menu appears in many of the routines and will always be referred to as the RECORD SELECTION MENU throughout the manual.

Option #1 allows you to select some or all of the records to be updated by entering either specific record numbers or a range of record numbers.

Option #2 allows you to look for a particular entry in a particular field. All records which contain the desired entry will be displayed.

Option #3 is used in conjunction with the Master Search and List routines.

Option #4 allows you to return to the first update menu where you may choose a different Update format or create a new one.

Option #5 returns you to the MENU SELECTION LIST.

For the example . . .

CHOOSE: option #1 Selected Records. Press (RETURN).

NOTE: If you wish to perform an entry search see the Inspect/Change chapter, page 64, for instructions.

The following prompt will appear:

```

      SELECT RECORDS (1-10)
      PRESS (RETURN) TO TERMINATE SELECTION
      1 ---->

```

For the practice example, you will only update record #1; therefore, you should . . .

TYPE: 1 (RETURN)

The following line will be displayed:

```
2 ---->
```

Since you are only going to update one record . . .

TYPE: (RETURN)

The ALL CORRECT (Y/N) prompt will appear.

TYPE: Y (RETURN)

The following prompt will appear:

```

      DISPLAY ALL DATA FIRST (Y/N)

```

If you wish to view the entire record before updating the specified fields, enter Y. The complete record, containing every field, will be displayed. After reviewing the record, you may continue to the Update format; the selected field(s) will be displayed and may be edited.

REMEMBER: To save time, only the amount and date field are contained in the Update format, therefore you will want to view the entire record to know which company's bill you are updating.

To display the entire record . . .

TYPE: Y (RETURN)

The DISPLAY SCREEN for the first record will appear.

```
                * UPDATE *  
  
RECORD 1      DISPLAY  
1. COMPANY NAME - SEARS  
2. STREET - 1253 HARRISON  
3. CITY - SPRINGTOWN  
4. STATE - IL  
5. ZIP - 60000  
6. AMT DUE - 350.00  
7. DUE DAY - 01/30/84  
  
(CTRL-B) UPDATE (CTRL-C) CONTINUE  
(CTRL-D) SKIP   (CTRL-E) RESTART  
(CTRL-Q) QUIT
```

The word DISPLAY will be flashing.

Control Keys

The CONTROL key options listed at the bottom of the display screen have the following functions:

(CTRL-B): Allows you to move directly into the Update mode and positions the cursor at the first field you have selected to update. This is very useful if you have a long record and do not need to page through all of the information before updating.

(CTRL-C): Allows you to view the remaining fields of the records. If all of the fields have been displayed, the Update screen will appear.

(CTRL-D): Allows you to skip the present record and view the next one.

(CTRL-E): Allows you to return to the beginning of the routine.

(CTRL-Q): Allows you to quit the routine and return to the MENU SELECTION LIST.

After viewing the display screen...

TYPE: (CONTROL-B)

The following UPDATE SCREEN will appear:

```

* UPDATE *
RECORD 1                                UPDATE
6. AMT DUE - 350.00
7. DUE DAY - 01/30/84

(CTRL-A) REPEAT   (CTRL-B) BACKUP
(CTRL-C) CONTINUE (CTRL-D) SKIP
(CTRL-E) RESTART  (CTRL-Q) QUIT
```

The word UPDATE will be flashing and the cursor will be flashing over the first character of the first selected field.

UPDATING DATA

There are two changes in the listing of control characters at the bottom of the screen.

1) (CTRL-A) has been added to the list.

Use this key to advance over a field without changing the data; the original data will remain unchanged.

2) (CTRL-B) has a new function.

Use this key to back up to the previous field.

Although the left and right ARROW KEYS are not mentioned at the bottom of the screen, they may be used to advance over characters in a field allowing you to change a portion of the entry.

Change the amount due to 300.00 . . .

TYPE: 300.00 (RETURN)

The cursor will move down to the first character of the next field.

Change the due date to 02/29/84.

TYPE: 02

Then press the right arrow key six times to keep the remaining characters in the field.

TYPE: (RETURN)

Since you only selected one record, you will be returned to the RECORD SELECTION MENU.

If you had performed an entry search you would be given the opportunity to select a new search item or return to the RECORD SELECTION MENU.

Using options 1-3 from the RECORD SELECTION MENU, you may select more records. You may also select or create a new format, using option #4.

For the example, you are ready to return to the MENU SELECTION LIST . . .

CHOOSE: option #5 Return to Menu. Press (RETURN).

SUMMARY

The Update routine, option #4 on the MENU SELECTION LIST, is used for editing data in specified fields.

As in the Inspect/Change routine, you may select which records you need to edit. (See the Inspect/Change chapter for instructions.)

You may enter the field numbers in any order; the fields will be displayed in the corresponding order. The fields you wish to have displayed can be stored in an Update format and this format can be used the next time you enter this routine and want to edit the same fields.

After selecting the fields, you select the records you wish to update.

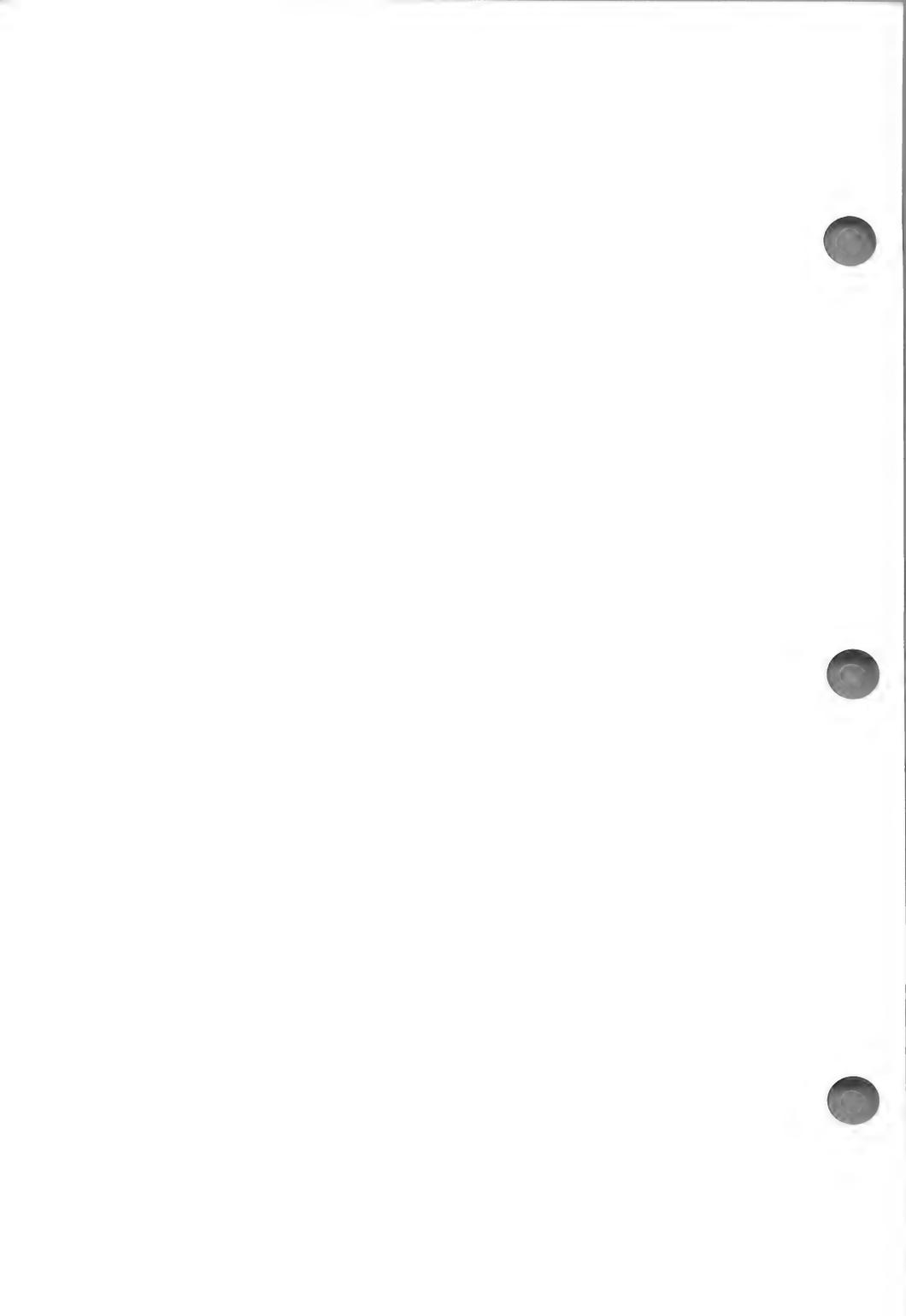
You are then given the option of viewing the entire record before updating the selected fields. It is usually wise to take advantage of this option.

After reviewing a record, the update screen will appear and you may enter the new data. Use the control keys displayed at the bottom of the screen as necessary. These keys are explained in detail in the body of this chapter.

HINT: If you have added fields to your data base through the Reconfigure routine, you can enter data into the new fields by using the Update routine.

SUMMARY OF COMMANDS

<u>KEYS</u>	<u>FUNCTION</u>
I. DISPLAY MODE	
(CONTROL-B) UPDATE	Continue to the Update screen to edit data
(CONTROL-C) CONTINUE	Continue with more fields or beginning of next record
(CONTROL-D) SKIP	Skip to next record - do not update
(CONTROL-E) RESTART	Return to RECORD SELECTION MENU
(CONTROL-Q) QUIT	Return to MENU SELECTION LIST
II. EDIT MODE	
(CONTROL-A) REPEAT	Repeat previous field entry
(CONTROL-B) BACKUP	Move cursor to previous field
(CONTROL-C) CONTINUE	Continue with more fields or next record
(CONTROL-D) SKIP	Skip to next record
(CONTROL-E) RESTART	Return to RECORD SELECTION MENU
(CONTROL-Q) QUIT	Return to MENU SELECTION LIST



REPLACE

When you need to make the same change to a number of records at one time, you may use the Replace routine. Indicate the fields which need editing and the new data you wish to enter. The program will automatically replace the old data with the new, in every record you have selected. This routine also allows you to perform simple math functions upon the data in the specified field. For example, you can add the constant 5 to a certain field in every one of the selected records.

For more complex math manipulations see the Math and Output Editor chapters.

The Replace routine allows you to select the records in which you wish the replacements to occur. The Record Selection menu appears in this routine as in other routines.

There is, however, an added feature to record selection for the Replace routine. If you choose to perform an **entry search**, you may specify more than one entry for which to search. You may, for example, search field #1 for both SEARS and JOHN'S SUPPLY CO. The records which contain either of the entries will be used during the Replace routine.

After the records have been selected you may make as many replacements as there are fields in your data base. Remember that all of the replacements will be performed on all of the selected records. After entering all of the replacements you then process the changes. These changes will be made automatically.

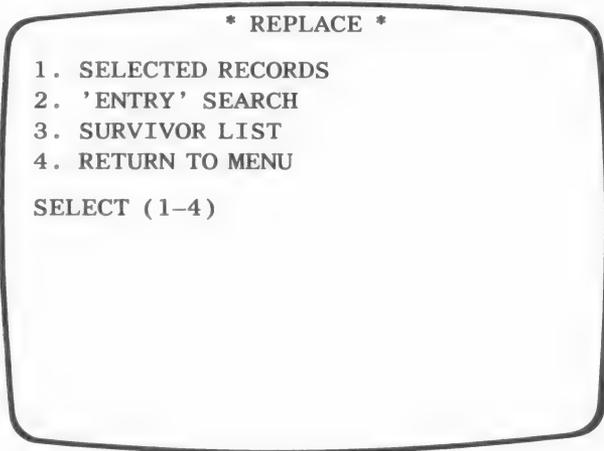
NOTE: When you process a set of replacements, the program processes each search criteria separately and applies all of the replacements to the selected records. If, for example, you have established three search criteria, the records passing the first criterion will be found and the replacements made. Then, the next criterion will be processed in the same manner. This will continue until all of the desired records have been processed. Due to the structure of this routine, you must be careful that the same record is not found by two different search criteria (this may happen if you run a substring search). If a record is called up twice, it will be processed twice, causing a noticeable effect on the data if any mathematical operations are performed.

REPLACE PROCEDURE

To enter the Replace routine . . .

CHOOSE: option #5 Replace from the MENU SELECTION LIST. Press (RETURN)

The RECORD SELECTION MENU will appear on the screen.



CHOOSE: option #2 Entry Search to perform an entry search. Press (RETURN).

See the Inspect/Change chapter for an explanation of option #1 Selected Records. See the Master Search routine for an explanation of option #3 Survivor List.

MULTIPLE ENTRY SEARCH

The following prompt will appear:

PRESS (F) TO VIEW FIELDS
FOUND IN WHICH FIELD (1-7)

You will be searching field #1 COMPANY NAME.

TYPE: 1 (RETURN)

The following menu is asking you to enter the kind of search you wish to perform:

SELECT SEARCH TYPE

1. FULL
 2. PARTIAL
 3. SUBSTRING
- SELECT (1-3)

For an explanation of the search type options, see the Inspect/Change chapter, (page 66).

For the example, you will perform a FULL search...

TYPE: 1 (RETURN)

The following prompts will appear:

PRESS (CTRL-B) WHEN FINISHED

ENTER SEARCH ITEM 1

TYPE: SEARS (RETURN)

Underneath the first entry the following line will appear:

ENTER SEARCH ITEM 2

REMEMBER: The search for this item will take place in the same field as for the first search item, i.e., field 1.

TYPE: VISA (RETURN).

You may enter up to 20 items you wish to have included in the search.

Press (CONTROL-B) when you have made all of the entries.

For the practice example you will only be searching for SEARS and VISA...

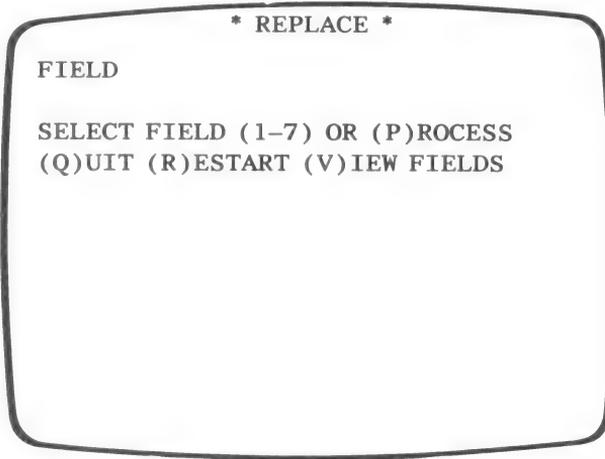
To indicate that you have finished making entries...

TYPE: (CONTROL-B)

By entering the above search items, you have indicated to the program which records to find and use with the Replace routine. Next, you must indicate the first field of data you wish to change.

Field Selection

The following screen is now displayed:



The word **FIELD** appears in the upper left hand corner; five command options appear at the bottom of the screen. These keys are used in the following manner:

1-7 Select a number within the specified range to indicate in which field you wish to make the replacements.

P After you have completed the replace model, press P to process the Replacements.

Q Return to the MENU SELECTION LIST.

R Return to the RECORD SELECTION MENU, if you chose the **selected** records option at the beginning of the routine. If you chose to perform an **entry search**, you have the opportunity to enter another set of search items for the same field, or return to the RECORD SELECTION MENU.

V View the fields in the data base.

For practice . . .

TYPE: V

A listing of the first five fields in your data base will appear at the bottom of the screen. Only five fields can be displayed at one time.

Your screen should look like this:

* REPLACE *		
FIELD		
FIELD#	LENGTH	NAME
1	(25)	COMPANY NAME
2	(15)	STREET
3	(20)	CITY
4	(2)	ST
5	(5)	ZIP
PRESS (RETURN)		

PRESS: (RETURN) to view more fields.

The current five field lines will clear and the following two will appear:

FIELD#	LENGTH	NAME	
6	(9)	AMT DUE	(J)
7	(8)	DUE DAY	

PRESS: (RETURN)

The field names will clear and the word FIELD will re-appear in the upper left hand corner.

The word FIELD is prompting you to enter the field which you wish to have edited.

For the example, you will edit the DUE DAY field (field #7) . . .

TYPE: 7 (RETURN)

NOTE: Press the left arrow key if you need to change the field number.

Your screen should now look like this:

```
          * REPLACE *  
  
FIELD 7 =  
  
SELECT (C)ONSTANT (F)IELD 7  
(Q)UIT (R)ESTART (V)IEW FIELDS
```

The cursor is positioned at the top of the screen and the program is waiting for you to enter the replacement data for field #7. To indicate what you want placed into field #7, you must use the command keys currently displayed at the bottom of the screen

These keys have the following functions:

C Indicates to the computer that you wish to replace the old field entry with a **CONSTANT** or that you will use a **CONSTANT** in an equation. The result of the equation will be stored in each of the selected records.

A constant is a piece of data which you enter directly. It is not dependent upon the data in your records.

F Indicates to the computer that you will be performing a calculation and using the value currently contained in the field as part of that calculation.

Q, R, V function in the same way as previously described.

NOTE: You can use the left arrow key to erase the last entry made to a line. You can press the arrow key until the current

entry line simply reads FIELD. You can then re-enter the information for that line. You cannot back up to a previous line.

REPLACE WITH A CONSTANT

For the practice example, you will replace the due day currently in field #7 of the selected records with 02/29/84.

STEP 1: Indicate that you are going to be entering a constant rather than a field number . . .

TYPE: C

STEP 2: Enter the desired constant.

The prompt at the top of screen will now read:

FIELD 7 = _____

The length of the line is determined by the field length. The cursor will be flashing at the beginning of the line.

You are being prompted to type the entry you wish to have placed in the selected field.

For the example . . .

TYPE: 02/29/84 (RETURN)

STEP 3: Enter the second part of an equation which uses the constant, or accept the line as it appears now.

The command keys at the bottom of the screen have changed again.

SELECT (+)ADD (-)SUBTRACT (*)MULTIPLY
(/)DIVIDE (Q)UIT (R)ESTART R(E)PLACE

At this point, the program is giving you the option of performing a mathematical function with the constant you have just entered. If you do not wish to do this, you can simply process the replacement.

The commands have the following functions:

+ is used if you wish to **add** a specified value, or field, to the entry.

- **subtracts** a specified value, or field, from the entry.

* **multiplies** the entry by a specified value, or field.

/ **divides** the entry by a specified value, or field.

Q, R, function the same way as previously described.

E indicates that you do not wish to do any more with the entry and that you have established the correct replacement.

Obviously, you need not perform a mathematical operation upon the date entry you have just made, so you may press **E** to accept the first replacement line.

TYPE: E

The screen will now look like this:

```
          * REPLACE *  
FIELD 7 = 02/29/84  
FIELD  
  
SELECT FIELD (1-7) OR (P)ROCESS  
(Q)UIT (R)ESTART (V)IEW FIELDS
```

The options at the bottom of the screen are the first set of options discussed in this routine.

You may now select another field and enter another replacement line. This replacement will take place on the same set of selected records as the first replacement. The next replacement in the example will contain an equation.

REPLACE WITH AN EQUATION

IMPORTANT: Equations are processed in the order in which they are entered. Be certain that if you are processing more than one equation, you enter them in the desired order. You will obtain a different result if, for example, you multiply and then add rather than add and then multiply.

$$(10 \times 4) - 3 = 37$$

$$(10 - 3) \times 4 = 28$$

The cursor is now flashing next to the word **FIELD**.

Choose the field you wish to edit.

For the example, you will edit the **AMT DUE** field.

TYPE: 6 (RETURN)

NOTE: You can replace the value with a simple numeric constant by following the steps in the previous section, **REPLACE WITH A CONSTANT**.

Steps 1-4 add 200.00 to the value in field #6. With these steps you indicate that you want to take the value presently in the field and add to it the constant of 200.00. The steps for this operation are as follows:

STEP 1: Indicate that the value presently in the field will be used as part of the replace operation.

TYPE: F

The second replace line should now read:

FIELD 6 = FIELD 6

STEP 2: Indicate that you will be **ADDING** something to the field value.

TYPE: +

The second replace line should now read:

FIELD 6 = FIELD 6 +

STEP 3: Indicate that you wish to add a constant to the field value. (NOTE: If you so desire, you may add the value of the field to itself by typing F.)

TYPE: C

The line should now read:

FIELD 6 = FIELD 6 + _____

STEP 4: Enter 200.00 as the constant...

TYPE: 200.00 (RETURN)

NOTE: You could have entered the constant first and then added the field value to it. You would have obtained the same result.

The above steps also apply to the other arithmetic functions. Be careful with subtraction and division, since the order in which you enter the two parts of the equation WILL affect the result.

The number of replace models you are permitted to create before processing the changes, *equals* the number of fields in your data base. Of course, you may return to the Replace routine after processing one set of changes, and process another set.

For the practice example, you need not enter any more replace models.

Your screen should look like this:

```
      * REPLACE *  
FIELD 7 = 02/29/84  
FIELD 6 = FIELD 6 + 200.00  
FIELD  
  
SELECT FIELD (1-7) OR (P)ROCESS  
(Q)UIT (R)ESTART (V)IEW FIELDS
```

If your screen matches the above sample, you are ready to PROCESS the changes. Otherwise, type R. The replace lines will clear and you can re-enter the information.

When the replacements are entered correctly, process the changes . . .

TYPE: P

If you have performed an entry search, as in the example, the following prompt will flash . . .

* SEARCHING *

You will then be told which records are being modified.

NOTE: If you performed an entry search and no records matched the search items, you will receive the following prompt . . .

NO RECORDS TO PROCESS
PRESS (RETURN)

After the modification has taken place you will be returned to the RECORD SELECTION MENU or asked to enter a new search item.

You may now select another set of records and run the Replace routine again.

If need be, you can select the same set of records again and make additional replacements.

If, before exiting the routine, you choose to run the routine again, you will be asked if you wish to use the same equations. TYPE: Y (RETURN) and the computer will automatically perform the previous replacements on the selected records.

For the practice example, you are finished using the replace routine . . .

CHOOSE: option #4 Return to Menu from the RECORD SELECTION MENU and you will return to the MENU SELECTION LIST.

SUMMARY

The Replace routine is another editing routine. In one pass, you may make a number of changes to selected records.

To edit your records do the following:

- 1) Select which records you wish to have changed.
- 2) For each field you want changed, enter the field number and then enter the *new* data which you wish to appear in that field. You may make as many replacements as there are fields in your data base.

You may replace the current field entry with a CONSTANT. For example, you could have the zip code 66666 placed into the ZIP field of every record.

You may also replace the current field entry with the RESULT OF AN EQUATION. For example, you may add 5 to whatever quantity is presently in the specified field and have the result of the equation saved in the field.

Remember that all of the changes you make at this time will be made to all of the selected records.

- 3) After you have entered all of the replacements, process those records.
- 4) If you wish to make another set of changes, or make the same changes to another set of records, you may begin the procedure again.

NOTE: The keystroke sequence used to create the replace models is explained in detail in the body of this chapter.

SUMMARY OF COMMANDS

KEYS	FUNCTION
I. FIELD SELECTION	
FIELD #	Choose field you wish to use in the replace model
P PROCESS	After replace model is created, process it.
Q QUIT	Return to MENU SELECTION LIST
R RESTART	Return to RECORD SELECTION MENU
V VIEW FIELDS	View field information
II. CONSTANT OR FIELD ENTRY	
C CONSTANT	Enter a constant
F FIELD #	Use selected field in an equation
Q QUIT	Return to MENU SELECTION LIST
R RESTART	Delete all replacement information and begin again
V VIEW FIELDS	View field information
III. SELECT OPERAND OR ACCEPT LINE	
+ ADD	Add to first entry
- SUBTRACT	Subtract from first entry
* MULTIPLY	Multiply by first entry
/ DIVIDE	Divide by first entry
Q QUIT	Return to MENU SELECTION LIST
R RESTART	Delete replacement information and begin again
E REPLACE	Accept current line of model <i>when necessary</i>



PRINTER CONTROL

Printer Control, option #18, establishes the characteristics of your report. These variables must be established before a report can be printed. The program has values that it uses automatically unless you indicate new values. The values the program has pre-established are called **default** values. You may change any of these values.

Printer Control also allows you to choose whether you want all of the right justified fields to be totaled each time a report is generated. Even if you are displaying data to the screen rather than making a printout, the Total Justified Fields option is active.

NOTE: When you save a printer format created in List or Search, the printer variables currently in memory are stored with the format. If, later, you change the printer variables, these changes will not affect the previously created format.

IMPORTANT: The following controls do not operate with the Custom Output routine. Custom Output uses its own printer controls.

PRINTER CONTROL PROCEDURE

CHOOSE: option #18 from the MENU SELECTION LIST.
Press (RETURN).

The following screen will appear:

```

* DEFAULT VALUES *
-----
ENTER <0> WHEN COMPLETED
-----
1- (80)  HOR. PRINTER SPACES (40-255)
2- (1)   LEFT MARGIN INDENT (0-79)
3- (66)  LINES PER PAGE (>1)
4- (1)   LINE FEEDS ON CARRIAGE RETURN
5- (F)   FORM OR SHEET FEED (F/S)
6- (1)   LINE FEEDS ON FORM FEED (>0)
7- (P)   FORM FEED ON P)AGE/R)ECORD
8- (C)   S)TOP ON FORM END OR C)ONTINUE
9- ( )   PRINTER CONTROL CHARACTERS
10-(N)   LINE FEED REQUIRED (Y/N)
11-(Y)   PRINT PAGE NUMBER (Y/N)
12-(1)   PRINTER SLOT NUMBER (1-7)
13-(0)   USE MODEM=( SLOT #1-7)/NOT=0
14-(2)   RT. JUSTIFY NO.FLD. (0-8) PLACES
15-(Y)   TOTAL JUSTIFIED FIELDS (Y/N)
16-( )   EIGHTY COLUMN OFF

                WHICH: ?
```

Next to each option number the default value is placed in parentheses. To change one of the default values, you simply enter the appropriate option number and enter the new value. Usually entering the new value is simply a matter of typing in a letter or a number and pressing (RETURN). Options #9 and #16 are a little more complicated. Each option is explained in detail in the following section.

You should feel free to experiment with changing the option numbers as you read through this chapter. If you change a value simply to experiment, be sure to change that value back to the default. Refer to the above picture for the default values.

PRINTER OPTIONS (1-16)

1. HORIZONTAL PRINTER SPACES – Default 80

NOTE: Horizontal spaces are often referred to as columns.

The number you enter here should *equal* the length of the longest line you will need to print *plus one*. You may *only* enter a number between 40 and 255, inclusive.

If you enter a very large number for the horizontal printer spaces, you will use valuable memory space and it will take longer than necessary for the routine to run.

Furthermore, if you enter a number so large that you exceed memory capacity and the program is unable to process the report, you will be informed of the problem during the Standard List or Search routines. A message will tell you the maximum number of horizontal spaces allowed. When this happens you must enter this Printer Control routine and enter a smaller number for this option.

REMEMBER: The smaller the page size the faster the routine will operate.

2. LEFT MARGIN INDENT – Default 1

This variable allows you to indent the *first* line of *every* record. The following lines of each record will not be indented. Enter 0 (zero) if you do not want to indent.

The number entered for the margin indent is deducted from the total characters which can be printed on the first line of the record. For example, if you choose to indent 5 spaces and the printer can only print 80 characters, you will then have 75 spaces left for printing data. If during the List routine, you select to print more than 75 characters on a line, any remaining characters will appear on the next line.

NOTE: An indentation of five (5) must be used if you select to number the records while designing your printer format in the Standard List or Search routines.

3. **LINES PER PAGE** – Default 66

Lines per page refers to the length of the paper or mailing label. The lines per page variable must be at least 2. Accuracy is very important when setting lines per page.

The number of lines per page is determined by multiplying the lines printed per inch by the length of the page. Most printers print 6 lines per inch and a standard sheet of paper is 11 inches long. Therefore, lines per page is set at 66 for paper that is 11 inches long. A standard mailing label is one inch long and therefore lines per page should be set at 6 if you are printing one inch mailing labels.

Selectable printers that print 88 lines on an 11 inch page, measure 8 lines per inch. You would then enter 88 for lines per page.

NOTE: See option #6 Line Feed on Form Feed to determine the length of the top and bottom margins.

4. **LINE FEEDS ON CARRIAGE RETURN** – Default 1

Enter a number to indicate spacing for each line. Select 1 for single space, 2 for double space and so on. You must enter a number greater than 0. Line feed cannot be varied from one line to the next.

5. **FORM OR SHEET FEED** – Default F

Select F when using continuous form feed paper. S is used for single sheets of paper such as stationery or typing paper. When single sheet feed is used, the printer stops at the end of each sheet to allow you to insert another sheet of paper.

When the reports are actually being printed, after you insert a new piece of paper, press C to begin printing on the new sheet of paper.

NOTE: Some printers will not permit use of individual sheets of paper.

6. **LINE FEED ON FORM FEED** – Default 1

Line feed on form feed refers to the number of blank lines that are left at the bottom of each page and at the top of the next page before printing continues. This variable must be greater

than 0 and less than the variable set for "Lines per page," option #3.

It is necessary to establish this bottom margin on continuous form feed paper so that you do not print on the perforation.

For example, if "Lines per page" is 66, and you want 4 blank lines at the bottom of each page and 4 blank lines at the top of the next page, the "Line feed on form feed" is set at 8. The paper must be positioned on the fifth line before printing begins to achieve these top and bottom margins.

NOTE – The example above will permit 58 lines of print on each page providing page numbers are not used. If page numbers are printed, there will be room for 57 printed lines.

Mailing labels also require a line feed to determine the number of blank lines before printing the next label on vertical, label paper. The number of spaces between mailing labels must be included.

For example, if "Lines per page" is 6, and the mailing label has 4 printed lines, there are 2 blank lines, one at the top and one at the bottom. The "Line feed on form feed" variable is 2.

It is very important to position the paper where the first line of print is to begin.

Single sheets also need a bottom margin so that the printer can hold the paper while printing near the bottom of the page. The top margin is established manually by inserting the paper and leaving the desired top margin.

7. **FORM FEED ON PAGE OR RECORD END** – Default P

This determines whether the form feed occurs at the end of each page (P) or at the end of each record (R). When P is selected, records will be printed on a page until there is no longer room to finish a complete record on that page. The paper will then automatically advance. The only time a record will be continued on the next page is when a single record is longer than the page.

Select (R) record when only 1 record is to be printed on each page.

8. STOP ON FORM END OR CONTINUE – Default C

(S) stops the printer at the end of each page. Use S especially for individual sheets so that the printer stops automatically after printing the number of lines set for “Lines per page”.

Also see option #5.

9. PRINTER CONTROL CHARACTERS – Default NONE

NOTE: To make the correct entry for this option, you must know about your printer hardware. If you do not know the required information, contact your dealer.

Your PRINTER INTERFACE CARD indicates to the computer how many characters to print before a carriage return. Sometimes, the default value for this information is not large enough to print your reports. If, for example, your report is designed to print eighty characters on a line, and your interface card defaults to forty characters per line, you must change the default value. This value is changed by entering a specific string of characters, called a **control string**.

You must refer to the manual which came with your interface card to determine:

- 1) the number of characters per line, your interface card normally allows you to print.
- 2) the control string necessary to allow for more characters per line.

You must select this option (option #9) to enter the necessary control string.

Example for entering control strings

The following example, shows how you would enter the necessary control characters for the most common Parallel Interface Card. This string allows you to print 80 columns per line. If your card requires different characters, follow the instructions but enter the correct sequence of characters for your interface card.

The interface card in the following example requires the following control characters: (CONTROL-I), 80N

To enter this sequence of characters, you must first . . .

CHOOSE: Option #9 Printer Control Characters. Press (RETURN).

The following message will flash at the bottom of the screen:

ENTER CHARACTERS IN QUOTES (“ ”)

This means that you must type a quotation mark before typing the first character of the entry and after typing the last character.

The cursor is flashing beside option #9.

Follow the example . . .

TYPE: ” (*quotation mark*)

PRESS: (CONTROL-I)

(A character will not appear and the cursor will not move, but the entry is stored.)

TYPE: 80N” (*quotation mark*).

PRESS: (RETURN)

Now you will see (80N). The quotation marks and the I are in memory; they do not appear on the monitor.

Clearing the control characters

If your interface card does *not* require that control characters be entered, but there is presently an entry between the parentheses, you must clear the entry. To do this you must . . .

CHOOSE: Option #9 Printer Control Characters. Press (RETURN).

A message will flash at the bottom of the screen:

ENTER CHARACTERS IN QUOTES (“ ”)

When clearing entries, you do *not* have to enter quotation marks. You simply . . .

TYPE: (RETURN)

Expanded or compressed type

Some printers allow expanded or compressed type. You may enter the necessary control sequence for this information when you enter the information for the interface card. Refer to your printer manual for the correct control sequence.

IMPORTANT: There is an exception to this. If the sequence of characters you are to enter begins with the ESC key, you must enter this sequence *before* entering the Data Factory. A sequence of commands beginning with the ESC key, is called an **escape sequence**. If your printer needs escape sequences to establish expanded or compressed type, these must be set up prior to entering The Data Factory.

To do this you must:

Start the computer with the System Master disk in drive #1.

TYPE: NEW (RETURN).

Turn on your printer.

Assuming the printer card is in slot #1...

TYPE: PR#1

Enter a line of code giving your special control characters. An example for one type of printer would be:

```
10PRINT CHR $(27); CHR $(20)
```

PRESS: (RETURN)

TYPE: RUN

When the disk stops spinning...

TYPE: PR#0 (RETURN)

Place The Data Factory in drive #1

TYPE: IN#6 (RETURN)

NOTE: Your dealer or the printer manufacturer should be able to supply the correct information for the control characters needed for your interface card if it is not found in the manual.

10. LINE FEED REQUIRED – Default N

Some printers require a line feed command at the end of a line. Entering Y (yes) allows your printer to receive this special character. If output prints over itself, come back to this item and change the N to Y.

11. PRINT PAGE NUMBER – default Y

By selecting Y, the word “page” and the page number will be printed at the bottom right margin of each page.

During the List routine you are asked whether or not you want field names printed, you must answer Y(es) if you want to print page numbers. In other words, you must have field names in your printout if you want page numbers.

NOTE: The number of lines printed on a page will be altered by one line to accommodate the page number if Y is chosen.

12. SLOT NUMBER FOR YOUR PRINTER – Default 1

Enter the slot number in which your printer card is located. This is usually slot #1.

13. USING A MODEM – Default 0

Enter 0 if a modem is not being used. When you want to use the Modem, come back to this item, and change the 0 to the slot# in which the modem card is located. When you are finished using the Modem, come back to this item and re-enter 0.

A Modem is a device for transmitting data over telephone lines. You may call your computer from another location with another computer or terminal and use The Data Factory through the phone line. The computer being called must have The Data Factory running with the Menu on the screen. This will allow the user calling in to enter the number of the feature he wishes to use. The “remote” user can use all of the program’s power, however, he may not use any feature that requires changing disks. All printer outputs will be on the main location’s printer only. The “remote” user will have the screen outputs of the program.

14. RIGHT JUSTIFIED NUMBER FIELD – Default 2

This variable determines the number of decimal places in right justified fields.

This variable must be 0 or higher. Enter a number 0–8.

The default value is 2 and this means that all right justified fields will be printed with two digits to the right of the decimal point. For example, if during data entry you enter the number 300; it will be printed as 300.00

NOTE: A field does not automatically become a right justified field by entering the number of decimal places. See Start a Data Base or Inspect/Change if you wish to establish right justified fields.

15. TOTAL JUSTIFIED FIELDS – default Y

Y enables you to get a numeric subtotal and total of right justified columns. The length of each right justified field must be long enough to accommodate decimal places, decimal points, and minus signs for results to be effective.

NOTE: Options #14 and #15 also apply to *screen* output during the Standard List and Search routine.

16. EIGHTY COLUMN OFF

If you are using an 80 column board and do *not* have an Apple IIe, you must enter a control sequence here. Refer to the manual which came with your 80 column board for the necessary sequence. This sequence instructs the computer to return to 40 columns after displaying reports.

If a control or escape sequence has already been designated an asterisk will appear between the brackets next to the option number. If there is an asterisk, you are advised to check that the correct control sequence has been entered.

If you have an Apple IIe, you do not need to enter the control character. Therefore, if an asterisk appears between the parentheses, you must clear the sequence which was previously entered.

To enter or clear a character, choose option #16 and the following screen will appear:

```
ENTER EIGHTY COLUMN SHUTOFF CHARACTERS
(CTRL-A) LPHANUMERIC ENTRY
(CTRL-B) ACKUP ONE CHARACTER
(CTRL-C) LEAR SHUTOFF CHARACTERS
(CTRL-D) ECIMAL VALUE ENTRY
(CTRL-E) XIT ENTRY MODE

EIGHTY COLUMN SHUTOFF CHARACTERS : NONE

ENTER ALPHANUMERIC CHARACTER :
```

The control keys at the top of the screen have the following function:

(CONTROL-A): indicates to the program that the character you will enter is a letter or a number.

(CONTROL-B): erases the last entry made and allows you to enter a new character.

(CONTROL-C): clears all of the shutoff characters.

(CONTROL-D): indicates to the program that the character you will enter is an ASCII decimal equivalency, and should not be interpreted as a simple numeric entry. (NOTE: Refer to the Apple II reference manual pages 5-7 for an explanation of ASCII equivalents and the Applesoft Manual which came with your computer, for a chart of the equivalencies.)

(CONTROL-E): returns you to the list of printer control options.

A shutoff command usually consists of a string of characters. Each character in the string must be entered individually.

Some of the characters will be simple letters and numbers while others will be special characters like (CONTROL-A) or ESC. Special characters must be entered as their ASCII equivalent (in numeric form).

In order for the program to differentiate between a simple numeric entry and an ASCII equivalent entry, you must press (CONTROL-A) or (CONTROL-D) before typing each entry.

To enter a simple letter or number . . .

PRESS: (CONTROL-A)

ENTER: the shutoff character

To enter ASCII decimal value equivalencies . . .

PRESS: (CONTROL-D)

ENTER: the correct decimal (numeric) equivalent

After you enter the decimal equivalents, the program will display the actual control character in inverse; escape is shown as ESC.

When you have entered all of the characters . . .

PRESS: (CONTROL-E)

You will return to the Printer Control options and there will be an asterisk appearing between the parenthesis of option #16.

REMEMBER: Enter each of the characters contained in the shutoff command.

NOTE: The order in which you enter the characters is very important. Be certain that you make the entry correctly.

Type in this hypothetical example. Do not worry, you will clear the entry at the end of the example.

Imagine that you needed to enter the following shutoff string: (CONTROL-I), A, 8

You would do the following:

PRESS: (CONTROL-D)

The following prompt will appear:

ENTER DECIMAL CHARACTER VALUE: 000

TYPE: 9 (RETURN)

The following lines will appear on the screen:

EIGHTY COLUMN SHUTOFF CHARACTERS:

I

ENTER DECIMAL CHARACTER VALUE: 000

PRESS: (CONTROL-A)

The last line on the screen will now read:

ENTER ALPHANUMERIC CHARACTER:

TYPE: A (RETURN)

The bottom two lines should now read:

EIGHTY COLUMN SHUTOFF CHARACTERS:

I A

ENTER ALPHANUMERIC CHARACTER:

Since the next character you wish to enter is also a simple number, rather than a control character, or an escape character, you can simply . . .

TYPE: 8 (RETURN)

The last two lines should now read:

EIGHTY COLUMN SHUTOFF CHARACTERS:

I A 8

ENTER ALPHANUMERIC CHARACTER:

Now that you have entered the entire string, you can EXIT the ENTRY MODE...

PRESS (CONTROL-E)

The options screen will re-appear. Note the asterisk between the parentheses of option #16. This indicates that a special shutoff command has been entered.

You will now CLEAR that entry.

CHOOSE: option #16. Press (RETURN).

```
ENTER EIGHTY COLUMN SHUTOFF CHARACTERS
(CTRL-A) LPHANUMERIC ENTRY
(CTRL-B) ACKUP ONE CHARACTER
(CTRL-C) LEAR SHUTOFF CHARACTERS
(CTRL-D) ECIMAL VALUE ENTRY
(CTRL-E) EXIT ENTRY MODE
```

```
EIGHTY COLUMN SHUTOFF CHARACTERS:
I A 8
```

```
ENTER ALPHANUMERIC CHARACTER:
```

You now want to CLEAR the string of characters I A 8:

PRESS: (CONTROL-C)

The list of shutoff command keys will clear.

The last two lines of the screen now read:

```
EIGHTY COLUMN SHUTOFF CHARACTERS: NONE
ENTER ALPHANUMERIC CHARACTER:
```

To return to the previous options screen...

PRESS: (CONTROL-E)

Now there is no asterisk between the brackets of option #16; this indicates that there is no special shutoff command entry.

When you finish entering all of the necessary printer control information for options #1-16...

TYPE: 0 (RETURN)

You will be returned to the MENU SELECTION LIST.

SUMMARY

You must check the printer variables before generating any reports. Many of these variables depend upon your printer and you should refer to the manual which came with your printer to determine the correct response. Other prompts refer to the form you wish the report to take and should be answered appropriately. The body of the chapter explains each prompt in detail.

NOTE: When you save a printer format created in List or Search, the printer variables currently in memory are stored *with* the format. If, later, you change the printer variables, these changes will *not* affect the previously created format.



CHECKING THE PRINTER CONTROLS FOR LIST/REPORT

Before using the LIST/REPORT routine with a STANDARD FORMAT, you should select PRINTER CONTROL and do the following:

CHOOSE: Option #18 PRINTER CONTROL from the MENU SELECTION LIST. Press (RETURN).

- 1) If you have a printer and are using an interface card which requires a special control sequence to print 80 characters per line:

CHOOSE: option #9 Printer Control Characters from the PRINTER OPTIONS MENU. Press (RETURN).

ENTER: the necessary control characters.

(See page 104 for instructions.)

- 2) If you have a printer which needs a special line feed command . . .

CHOOSE: option #10 Line Feed Required from the PRINTER OPTIONS MENU. Press (RETURN).

TYPE: Y (RETURN)

(See page 107 for details.)

- 3) If you have a printer and are going to number the records on your printout (for the practice example, record numbers will be printed.)

CHOOSE: option #2 Left Margin Indent from the PRINTER OPTIONS MENU. Press (RETURN).

TYPE: 5 (RETURN)

(See page 101 for details.)

- 4) If you are going to display to the screen and you have an 80-column board which you are using with an Apple II or II plus *only* . . .

CHOOSE: option #16 Eighty Column Shut Off from the PRINTER OPTIONS MENU. Press (RETURN).

ENTER: The special 80 column shutoff command

(See page 108 for instructions.)

IMPORTANT: If you are following the example, all of the other Printer Control options default to the appropriate value. If you are designing your own report, you are encouraged to consult the Printer Control chapter and make any changes you feel are necessary. Furthermore, if you believe that someone else has changed the defaults, enter the routine and make certain that the changes are acceptable.

If you design a format, and print a report, and the report does not look like you expected, first make certain that your format is correct, then check the **PRINTER CONTROL** options.

LIST/REPORT

The List/Report routine has two functions.

- 1) List allows you to choose a group of records that can be used in many of the Data Factory routines. You choose the records by entering the record numbers. The program then creates a list of these record numbers. This list is always referred to as a **Survivor List**. After the Survivor List has been created, you can either return to the MENU SELECTION LIST or continue with the Report portion of the routine.
- 2) Report allows you to print your records or display them on the screen. Use Standard Output to design a relatively simple report. Custom Output formats can be highly specialized and are created in another routine. Once a Custom Output has been created, it can then be used with List/Report. Custom Output formats will be discussed in a later chapter.

LIST

First, you will learn to make a Survivor List.

CHOOSE: option #12 List/Report from the MENU SELECTION LIST. Press (RETURN).

If you have the Utility disk in drive #1, you will see:



PLEASE INSERT
REPORT DISK
INTO DRIVE 1
AND PRESS (RETURN)

Place the Report disk into drive #1 and . . .

PRESS: (RETURN)

Record Order

You will see the following menu:

```
      * LIST/REPORT *  
      --- LIST OPTIONS ---  
  
1) AS ENTERED  
2) AS SORTED  
3) SURVIVOR LIST  
  
SELECT:
```

This menu gives you the option of displaying your records in the order in which they were entered or in sorted order. If you wish the records to appear in a sorted order, you must run the SORT routine *before* entering the List/Report routine. The Sort routine is discussed later in the manual.

You are also given the option of using the records contained in the Survivor List. A Survivor List is created through this routine as well as through Master Search. This option will be discussed in more detail later in this chapter and in the Master Search chapter.

NOTE: If you have been following the example in the manual, a Survivor List has not yet been created. Do NOT choose this option until there is a Survivor List.

For the present example . . .

CHOOSE: option #1 As Entered. Press (RETURN).

The following prompt will appear:

LOAD DATA DISK VOLUME 1 INTO DRIVE #2
THEN PRESS 'RTN'

Make certain that volume 1 of the Data disk is in drive #2 and ...

PRESS: (RETURN).

Record Selection

The following screen will appear:

```
SELECT RECORD NUMBERS
FOR 10 RECORDS .

ENTER AS ->1 (SINGLE)
OR AS ->1-10 (RANGE)
OR <0> WHEN FINISHED

1 ->
```

You must now enter the numbers which correspond to the records you wish to list. If you want to list all of the records, enter a range from one to the last record in the data base.

You may also enter a range which does not encompass all of the records. For example, you may enter 3-8.

Finally, you may enter single record numbers.

For the practice example ...

TYPE: 1-10 (RETURN)

NOTE: If there are only 10 records in the data base, the ALL CORRECT Y)ES N)O prompt will appear immediately.

If there are more than 10 records in your data base, the following line will appear below your entry . . .

11 ->

To indicate that there are no other record entries . . .

TYPE: (RETURN)

The following prompt will appear:

ALL CORRECT Y)ES OR N)O

When the record number entries are correct . . .

TYPE: Y (RETURN)

NOTE: If you chose to have your records listed AS SORTED, the record numbers which you enter at this time refer to the *sorted* record numbers not the physical record numbers. To have the first five sorted records listed, you would enter 1-5, you need not be concerned with the corresponding physical record numbers.

SURVIVOR LIST

After entering the records you wish to list and answering Y to the All Correct prompt, the following message will appear briefly while the computer creates the Survivor List:

* CREATING SURVIVOR LIST *

A SURVIVOR LIST, containing the records you have just selected, e.g., 1-10, is automatically created. After the Survivor List is created, you have two options:

- 1) You may return to the MENU SELECTION LIST and use the selected records with another routine, by choosing Survivor List (Option #3) from the RECORD SELECTION MENU.

The Survivor List of records can be used with any routine in which the RECORD SELECTION MENU appears (including the List routine itself).

Choosing the Survivor List option from the RECORD SELECTION MENU calls up the records presently in the List. These records are displayed and you can work with them just as you would work with the records chosen through one of the other RECORD SELECTION options.

- 2) Continue directly with the REPORT portion of the LIST/REPORT routine.

OUTPUT PROCESSOR (DESIGNING YOUR REPORT)

After the program creates the Survivor List, the following screen will appear:

```
==== A MICRO LAB DATABASE ====  
      OUTPUT PROCESSOR  
      1) STANDARD  
      2) MICRO LAB CUSTOM  
      3) RETURN TO MENU  
SELECT:
```

CHOOSE: Option #1 Standard, from the OUTPUT PROCESSOR MENU. Press (RETURN).

See the Output Editor chapter for designing a custom output format.

After the <LOADING MODULE> and <LOAD FILE INFO> messages are displayed, the following prompt will appear:

DO YOU WANT OUTPUT TO PRINTER (Y/N)?

If you have a printer . . .

TYPE: Y (RETURN)

Otherwise . . .

TYPE: (RETURN)

If you did *not* want the report sent to the printer, you will receive the following prompt:

USE AN 80 COLUMN OUTPUT (Y/N)

Answer Y, for yes, to this question only if you have an eighty column board you wish to use. (This question also applies if you are using an Apple IIe and want your output to appear in an 80 column format.

Otherwise, answer N, for no.

If you have an 80 column board, and you are *not* using an Apple IIe, it will be necessary to indicate the slot in which the 80 column board resides.

NOTE: If you are not using an Apple IIe and have an 80 column board, you should have previously entered the Printer Control routine and entered a special shutoff command in option #18 of the Printer Control menu. If you have not done this, continue stepping through the List routine until you are given the option of returning to the MENU SELECTION LIST. Return to the menu, enter the Printer Control routine, and follow the instructions in the manual, pages 108-113, for entering the 80 column shutoff command.

Format Selection

The following prompt should now appear on your screen:

PLEASE INSERT FORMAT DISK
INTO DRIVE 2 AND PRESS (RETURN)

At this point you may enter the disk you used for the Update format or you may insert a blank, previously initialized disk. Each time you print or display records, you must use a format which you create by answering a series of questions regarding layout. After you answer these questions, you may store them on disk. Each time the same kind of report is generated you will not need to take the time to design the same format.

NOTE: The printer control variables currently in memory are saved with the format.

Place a Format disk into drive #2 and press (RETURN).

You will see the following screen:

FORMAT SELECT:

- 1 CREATE A NEW FORMAT
- 2 CONTINUE WITH MORE FORMATS
- 3 CATALOG ANOTHER DISK
- 4 RETURN TO MENU

SELECT (1-4)?

If there had already been formats on the disk, the format names would have appeared on the menu and you would have been able to use one of those formats. The above four options would have been renumbered.

IMPORTANT: If you have elected to print the records, and there are already List formats on the disk, only those formats which were created for the **printer** will appear.

If you have elected not to print the records, only those formats which were created for the **screen** will appear.

A format marked with a **.P-F**, indicates that the format can only be used to list to the printer. A format marked with a **.M-F** indicates a format which goes strictly to the monitor.

Option #1 allows you to create a new format.

Option #2 is only applicable if you have created many formats and the names of all of them will not fit on one screen. Choose this option to view the remaining formats.

Option #3 allows you to insert another Format disk and see if the format you wish to use is contained on that disk.

Option #4 allows you to return to the MENU SELECTION LIST.

CHOOSE: option #1 (or whatever number corresponds to CREATE A NEW FORMAT). Press (RETURN).

Insert the data disk when prompted and press (RETURN).

FORMAT OPTIONS

You will be prompted to answer questions regarding the layout of your report. The answer to these questions are saved on the Format disk.

The following is an outline of the available format options:

1. A report with or without **FIELD NAMES**
2. A **printed** report with or without a **FILE TITLE**, including the date or remark.
3. A report in a **HORIZONTAL** or **VERTICAL FORMAT**.

If you choose **HORIZONTAL**:

- A. **HOW MANY FIELDS HORIZONTALLY** per line?

- B. WRAPAROUND FIELD NAMES or only print one line of names?
 - C. Print fields vertically, UNDERNEATH each other, after the first line of data?
 - D. FIELDS ONLY ONE SPACE APART?
(only available if you do not print field names.)
4. NUMBER RECORDS (two types of numbering options available.)
5. Choose the FIELDS you want to use.

The first question is now on your screen.

* **

Questions marked in the manual with one asterisk (*) will always appear when you are following the example.

Questions marked with two asterisks (**) will appear when you are using a printer.

* Question #1

PRINT FIELD NAMES (Y/N) ?

You can have field names appear next to each field of data. If, later in the routine, you choose to print more than one field on a line (horizontal format), the field names will appear at the top of the page or screen. These field names will act as column headings. If you choose to print only one field on a line (vertical format), the field names will appear to the left of each piece of data.

For the practice example, you will have field names printed . . .

TYPE: Y (RETURN)

**Question #2

PRINT FILE TITLE (Y/N)?

The above prompt will appear, only if both of the following are true:

- 1) you are sending the report to a **printer**

2) you have answered Y to question #1

Answering Yes to this prompt indicates that you want the file name and the date or remark printed at the top of the listing. Remember that you enter the DATE OR REMARK when you began using the program (see page 22).

If you are following the example, and this prompt appears . . .

TYPE: N (RETURN)

* Question #3

PRINT RECORDS HORIZONTALLY OR VERTICALLY (H/V)?

You can have the data appear horizontally, creating a separate column for each field, or vertically, with every field appearing on a separate line.

HORIZONTALLY

REC #1:	fld #1	fld #2	fld #3
REC #2:	fld #1	fld #2	fld #3

VERTICALLY

REC #1
fld #1
fld #2
fld #3
REC #2
fld #1
fld #2
fld #3

For the example . . .

TYPE: H (RETURN)

* Question #4

PRINT HOW MANY FIELDS HORIZONTALLY BEFORE CARRIAGE RETURN?

This prompt will only appear if you have answered:
H to question #3

This prompt appears after a list of the fields and their length.

It is important to realize that the number of fields that can fit on one line depends upon how many characters can fit on a line. This number varies with your printer and paper size. If you are displaying the report to the monitor, the number will either be 40 or 80 depending upon whether or not you have an 80 column board.

If there is not enough room for all of the fields on one line, the remaining fields (or portion of a field) will appear on the next line.

After the correct number of the fields have been displayed, a true carriage return will appear.

You must determine how many fields you want to have appear before a carriage return. The program will automatically split any fields which cannot fit on the first line and move the remaining characters to the next line.

The following illustration should help to clarify:

Imagine that you have a limit of forty characters per line. You have indicated three fields before a carriage return and you will display a total of 5 fields per record. The total length for the first three fields is 75 characters. The 35 extra characters will appear on a second line. Then, the last two fields of the record will be printed on the next line.

A single record of a report would look something like this:

```
JANE SMITH                1 MAIN STREET  
                           CHICAGO  
IL 60657
```

You will note that when the data in a field is shorter than the field length, spaces appear between the fields of the record. This will always happen if you opt to print field names. If you do NOT want to print field names and want the gaps between data closed, see question #7.

For the example, enter 3 for the number of fields before a carriage return . . .

TYPE: 3 (RETURN)

NOTE: Later in the routine, you will have the opportunity to indicate which fields you wish to have displayed. You can also determine the order in which they will appear.

* Question #5

WOULD YOU LIKE THE WRAPAROUND OPTION (Y/N)?

This prompt refers to the **field names** and will only appear if you have responded:

H to the horizontal format option (question #3)

and

Y to the field name option (question #1)

Enter Y in response to this question, if you want the names of *every* field listed at the top. If there is more than one line of data per record, there will be more than one line of names.

A printout of one record, with field names, would look like this:

NAME	CITY	ADDRESS
JANE SMITH	CHICAGO	1 MAIN STREET
IL 60657		

Enter N in response to this question, if you only want the names of the *first* line of fields to appear.

A printout of a record, with only one line of field names, would look like this:

NAME	CITY	ADDRESS
JANE SMITH	CHICAGO	1 MAIN STREET
IL 60657		

For the practice example . . .

TYPE: N (RETURN)

QUESTION #7

DATA COMPRESSED

This prompt appears if you responded:

H to the horizontal output prompt (question #2)
and
N to the field names prompt (question #1).

Answering Y to this option will move all of the field data together, leaving only one space between each field entry, while maintaining the same number of fields before a carriage return.

Your printout would look like this:

```
JANE SMITH 1 MAIN STREET CHICAGO  
IL 60657
```

If you answer N to this prompt, the program will fill the remaining space in each field with spaces. Your printout would look like this:

```
JANE SMITH                1 MAIN STREET  
                CHICAGO  
IL 60657
```

* QUESTION #7

UNDERNEATH FORMATTING

This option only appears if you have responded:

N to the field headings prompt (question #1).
and

N to the wraparound prompt (question #6) (*assumed if field headings were not selected*)

and

H to the horizontal output prompt (question #3)

Underneath formatting will print the first line of data horizontally. The remaining fields will be printed vertically.

To continue with more questions . . .

PRESS: (RETURN)

* QUESTION #10

PRINT WHICH FIELD

A listing of all of the fields will appear, followed by the lines:

field selection- <RTN>=ALL/<O>=FINISHED

PRINT WHICH FIELD

If you want all of the fields printed, simply press (RETURN). Otherwise, enter the number of the first field you want printed. The order in which you enter the field numbers will be the order in which they are printed.

TYPE: 1 (RETURN)

2 (RETURN)

3 (RETURN)

4 (RETURN)

5 (RETURN)

After you have entered the last field number . . .

TYPE: 0 (RETURN)

SAVING A FORMAT

The following prompt will appear:

SAVE THIS FORMAT TO DISK (Y/N)?

Once you have designed a standard output format, you need not enter the design information again. You can give the format a name and save it to your disk. The next time you need the same kind of report generated, you can simply choose the appropriate format name from the first menu of this routine.

The record selection is not saved with the format. Before selecting to use a pre-created format, you must choose the records you wish to have printed or displayed.

NOTE: The printer control variables, established through option #18 Printer Control *are* saved as part of the format.

For the practice example, you will save this format . . .

TYPE: Y (RETURN)

The following prompt will appear:

PLEASE INSERT FORMAT DISK
INTO DRIVE 2 AND PRESS (RETURN)

Check to make certain that the Format disk is in drive #2 and . . .

PRESS: (RETURN)

The following line will appear on the screen:

ENTER NAME FOR FORMAT (28)

Note that the name can have a maximum of 28 characters.

For the practice example . . .

TYPE: PRACTICE FORMAT (RETURN)

Insert the data disk when prompted and press (RETURN).

THE GENERATED REPORT

The following prompt will appear on the screen:

PROCESSING PAGE
PRESS (CTRL-Q) TO ABORT

If you no longer wish to list the records you may press (CTRL-Q) to abort, while this prompt remains on the screen. You will be returned to the MENU SELECTION LIST.

The selected records, containing the fields you designated, will be displayed or printed.

If you are displaying records to the screen, you must press C (RETURN) to see any remaining records.

If the TOTAL JUSTIFIED FIELDS option was chosen in the Printer Control routine, at the end of the record listing there will be a dotted line followed by the totals of any justified fields. If you have not changed the entry for Printer Control option #18 Total Justified Fields, the totals will be printed automatically. (See the Start a Data Base chapter, for an explanation of justified fields and see the Printer Control chapter to change the Total Justified Fields option).

After the entire report has been displayed or printed, the following prompt will appear:

SELECT: (C)OPIES (E)ND (R)ESTART.

If you want copies of the output . . .

TYPE: C

You will be asked to indicate how many copies you need. You may make a maximum of 25 copies.

To end the routine and return to the MENU SELECTION LIST . . .

TYPE: E (RETURN)

To create a new format, or choose a previously created one . . .

TYPE: R (RETURN)

For the practice example . . .

TYPE: E (RETURN)

If a program disk is already in drive #1, press (RETURN).

You will be returned to the MENU SELECTION LIST.

SUMMARY

REMEMBER: Before using the List/Report routine, enter the Printer Control routine and provide the necessary information.

The List portion of the List/Report routine allows you to select the records you wish to print. The program automatically creates a Survivor List containing those records.

The Report portion of the List/Report routine will print your records using a Standard Output format or a Custom Output format. A Custom Output format permits you to create a highly specialized printout. (See the Output Editor chapter for details.)

When creating a Standard Output format, you must answer questions regarding the format of the printed report. The answers to the format questions can be saved for future use. If you have already created and saved the desired format, you need only select records and then choose to use previously created format. The report will print immediately.

SORT

The Sort routine establishes a record order based on the data in a field. You can sort by any field in your data base. For example, you could put your records in order by the DUE DAY, or alphabetically by COMPANY NAME.

You can also perform a level sort which allows you to sort on more than one field at a time.

It is important to note that the actual record order does not change but rather the computer creates a file of the sorted record order. Because the actual record order is not changed, you always have the option of listing records in sorted order or in the order in which they were entered, i.e., physical order.

SORT PROCEDURE

CHOOSE: option #3 Sort from the MENU SELECTION LIST.
Press (RETURN).

The following screen will appear.

```
SORT SELECTION
WHICH KIND OF SORT:
1) NORMAL SORT
2) LEVEL SORT
WHICH: ?
```

There are two sort options but you can only store one sort format at a time. The first option creates a normal, one-level sort. The second option creates a multi-level sort.

NORMAL SORT

CHOOSE: option #1 Normal Sort from the SORT SELECTION MENU. Press (RETURN).

The program will load and read the "FILE STATS."

Then, a list of the fields in your data base will appear.

* SORT ROUTINE *

-
- 1 COMPANY NAME (25)
 - 2 STREET (30)
 - 3 CITY (20)
 - 4 ST (2)
 - 5 ZIP (5)
 - 6 AMT DUE (9)
 - 7 DUE DAY (8)

<CR>

Note the number which corresponds to the field by which you wish to sort.

For this example, you will sort by the Due Day, field #7.

The <CR> at the bottom of the screen stands for carriage return. When you are ready to continue with the routine, you should . . .

PRESS: (RETURN)

You will see the following prompt:

PLEASE ENTER THE SORT KEY

FIELD NUMBER ?

#

You may press (RETURN) if you want to review the list of fields.

You may press (CONTROL-Q) if you need to exit the routine and return to the MENU SELECTION LIST.

For the example, you will enter the field number . . .

TYPE: 7 (RETURN)

The following screen will appear.

```

* SORT ROUTINE *
-----
PLEASE
SELECT SORT TYPE
1) WORD SORT - ASCENDING
2) WORD SORT - DESCENDING
3) NUMBER SORT - ASCENDING
4) NUMBER SORT - DESCENDING
5) DATE SORT - ASCENDING
6) DATE SORT - DESCENDING
SELECT (1-6)

```

NOTE: Type (CONTROL-Q) if you need to return to the MENU SELECTION LIST.

A sort can be in ASCENDING order:

a-z, 1-10, 01/01/83-12/31/83

It can also be in DESCENDING order:

z-a, 10-1, 12/31/83-01/01/83

You must indicate what kind of data is stored in the sort field.

WORDS - Any field which only contains alphabetic characters should be sorted as a word.

NUMBERS - Any field which only contains numeric data should be sorted as a number.

WORDS OR NUMBERS - If a field contains an alphanumeric string, e.g., 12a, you must decide how you want the string to be interpreted. If an alphanumeric field is sorted as a number the letters will be ignored. See the chapter on VAL functions in your Applesoft manual.

If you have an alphanumeric field sorted as a word, numbers take precedent over letters, e.g., in ascending order 12 will be positioned before 12a.

NOTE: Zip codes can be sorted as words or numbers.

DATE - If you want a field sorted as a date, the data must be in the following format: mm/dd/yy. Be certain to use slashes to separate the parts of the date.

For the practice example . . .

CHOOSE: option #5 Date. Press (RETURN).

The computer will sort your records by the DUE DAY field in ASCENDING order.

The following prompt will appear:



READING SORT KEYS ON 10 RECORDS
PLEASE WAIT

NOTE: *The number of records stated in this prompt refers to the number of records presently in your data base.*

Then you will see:



WRITING INDEX FILE
TO DISK

It is the index file which stores the sorted record order. NOTE: Before a sort is performed, the index file contains the order of your records as they were entered.

You are then prompted to . . .



PLEASE INSERT UTILITY DISK
INTO DRIVE 1 AND PRESS (RETURN)

Make certain that the Utility disk is in the drive and . . .

PRESS: (RETURN)

The following prompt will appear:



SORT COMPLETED
LOADING MENU

You will be returned to the MENU SELECTION LIST.

You may now enter the List/Report or Search routines, and choose As Sorted when the appropriate menu appears. The records will be listed in sorted order. If you choose the As Sorted option in the List routine, the Survivor List which is created will be in sorted order. (See the chapter on the List or Search routine for instructions.)

LEVEL SORT

A level sort is used if you want to have your records appear in an order that is more complex than given when using Normal Sort. A multi-level sort enables you to differentiate between records which have duplicated field entries. All of the records with the same entry in the first field of your sort will be grouped together. Within that group the records will be sorted by the second field of the sort. If there are duplications in the second field, all of those records will be sorted by the third field of the sort.

You may create a maximum of four levels.

The following is an example of a level sort:

DATE and within the date by
COMPANY and within business by
AMT DUE

Note that the order of the field levels is very important.

The result of the above sort would be something like this:

DUE DAY: 09/01/83
COMPANY: SEARS
AMT DUE: 300.00

DUE DAY: 09/01/83
COMPANY: VISA
AMT DUE: 300.00

DUE DAY: 09/09/83
COMPANY: TOYS ETC.
AMT DUE: 20.00

DUE DAY: 09/09/83
COMPANY: TOYS ETC.
AMT DUE: 1000.00

DUE DAY: 09/15/83
COMPANY: AL'S COMPUTER SHOP
AMT DUE: 50.00

LEVEL SORT PROCEDURE

CHOOSE: option #3 Sort from the MENU SELECTION LIST to learn about designing a level sort. Press (RETURN).

You will see the following SORT SELECTION MENU:

WHICH KIND OF SORT:

- 1) NORMAL SORT
- 2) LEVEL SORT

WHICH: ?

CHOOSE: option #2 Level Sort from the SORT SELECTION MENU. Press (RETURN).

The prompts <LOADING MODULE> < LOADING DRIVERS > will appear.

Then, the fields of your data base will be displayed for review.

* LEVEL SORT *

1 COMPANY NAME
2 STREET
3 CITY
4 ST
5 ZIP
6 AMT DUE
7 DUE DAY

<CR>

Press: (RETURN)

You will be asked to indicate how many levels you wish to sort...

NUMBER OF LEVELS TO SORT?

UP TO FOUR (4)

-->

Remember that in the above example, there were three fields in the level sort. Therefore, you should...

TYPE: 3

Your screen should now look like this:

```

* LEVEL SORT *
-----
SORT 3 LEVELS DEEP
IS THIS CORRECT?
PRESS <CONTROL-Y> FOR YES
PRESS <CONTROL-N> FOR NO
<CONTROL- >

```

You must verify your entry of 3...

PRESS: (CONTROL-Y)

A listing of field names will appear.

PRESS: (RETURN)

The following prompt will appear:

```

FIRST (PRIMARY) SORT FIELD
FIELD NUMBER ?
#

```

The first field of the sort is called the PRIMARY SORT FIELD.
Indicate the DUE DAY as the primary sort field...

TYPE: 7 (RETURN)

The following screen will appear:

*** LEVEL SORT ***

FIRST (PRIMARY) SORT FIELD

SELECT SORT TYPE

- 1) WORD SORT - ASCENDING
- 2) WORD SORT - DESCENDING
- 3) NUMBER SORT - ASCENDING
- 4) NUMBER SORT - DESCENDING
- 5) DATE SORT - ASCENDING
- 6) DATE SORT - DESCENDING

WHICH:

Refer to the section on the normal sort for the distinction between sort types.

You need to perform a date sort in ascending order ...

TYPE: 5

You are now prompted ...

SECOND SORT FIELD

FIELD NUMBER ?

#

Indicate the COMPANY NAME field ...

TYPE: 1 (RETURN)

The SORT TYPE MENU will appear.

You need to perform a word sort in ascending order ...

TYPE: 1

When prompted . . .

THIRD SORT FIELD

FIELD NUMBER ?

#

Indicate the AMT DUE field . . .

TYPE: 6 (RETURN)

The SORT TYPE MENU will appear:

You will perform a number sort in ascending order.

TYPE: 3

After you have entered all of the fields, you will see a screen with your sort design.

* LEVEL SORT *			
<u>LEVEL</u>	<u>FIELD</u>	<u>TYPE</u>	<u>ORDER</u>
1	#7	DATE	ASC
2	#1	WORD	ASC
3	#6	NUM	ASC

IS THIS CORRECT ?

0-ALL CORRECT
1-3 CHANGE THIS ENTRY

WHICH:

If everything is in order . . .

TYPE: 0

Otherwise . . .

ENTER: the number of the level you wish to edit. You will be prompted to enter the correct information for that level.

After you type 0, indicating that all is correct, the sort will begin.

As the disk spins, the program will display messages telling you each step of the sorting process.

When the sort is complete you will be returned to the MENU SELECTION LIST.

You may view any or all of the records in sorted order by entering the List/Report or Search routine and choosing As Sorted from the appropriate menu. Each time you sort data, prior sorts are erased. You can only print out the last sort.

SUMMARY

Creating a sort allows you to establish a record order.

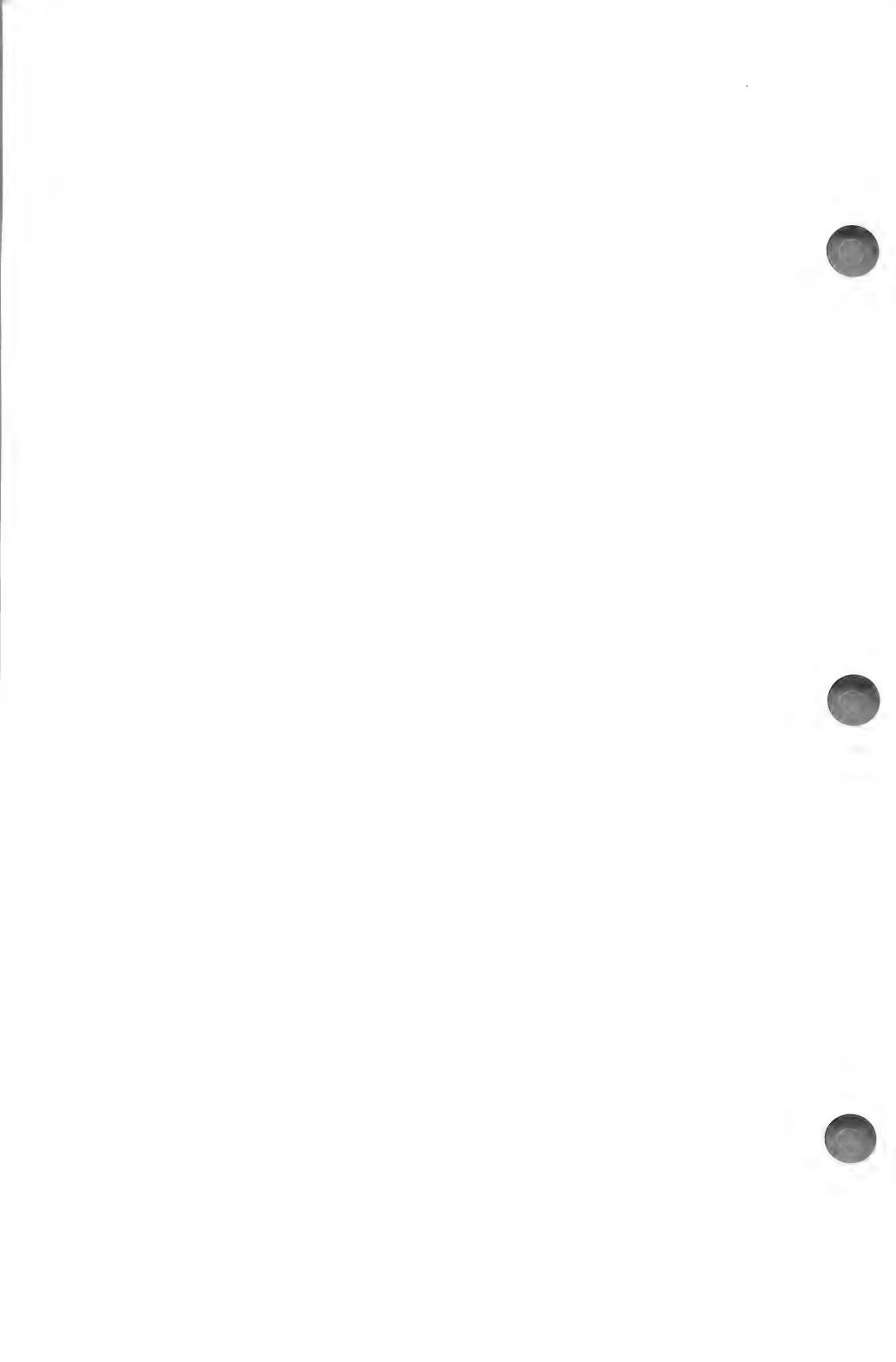
A normal sort sorts on one field only. A level sort is more complex and enables you to differentiate between records which have duplicated field entries.

In a normal sort, you first choose a sort field. Then, you indicate the type of data in the sort field and whether you want the records to appear in ascending or descending order.

In a level sort you establish a primary sort field; if there is more than one occurrence of a particular entry then the records with the duplicated entry are ordered according to the secondary sort field. (See the example in the body of the chapter.)

When creating a level sort, you first specify the number of levels; you can create up to four levels. You then enter the field number and type of sort for each of the levels.

The Sort routine establishes an order but nothing is printed. To print or display your records in sorted order you must use the List/Report or Search routine.



SEARCH

The Search routine allows you to search for one or more specific field entries and then display or print those records which contain the desired data.

For example, you may want to produce a separate listing for each month of the year. You could search the Due Day field for 01, 02, 03 . . . 12 and generate twelve listings, one for each month of the year. Data Factory allows you to label each listing so that you can easily recognize what the records in each report have in common.

The Search routine has the added feature of allowing you to automatically generate a categorized report of your records. You simply choose a field on which to INDEX and the program will find each unique entry and generate a separate list of records for each entry. For example, if you run an index on a date field, a separate list of records will be created for each unique date found in the designated field.

Later, another kind of search routine will be discussed. This routine, Master Search, enables you to establish more complex criteria than the ordinary Search routine. Master Search creates a Survivor List which can be used in conjunction with other routines.

SEARCH PROCEDURE

NOTE: Before working with the Search routine, you must select Printer Control from the MENU SELECTION LIST and check that the necessary information has been entered. See the List chapter, page 115, for a list of the most common changes which need to be made. The practice example in the Search routine requires the same Printer Control entries as the List routine. See the Printer Control chapter for instructions on making the changes.

When you are ready to work with the Search routine . . .

CHOOSE: option #13 Search from the MENU SELECTION LIST. Press (RETURN).

If the Utility disk is in drive #1 you will see the following prompt:

PLEASE INSERT
REPORT DISK
INTO DRIVE 1
AND PRESS (RETURN)

Insert the Report disk and . . .

PRESS: (RETURN)

The <LOADING MODULE> and <LOAD FILE INFO> messages will be displayed.

You will see the following prompt:

DO YOU WANT OUTPUT TO PRINTER (Y/N)

If you have a printer and you want to make a printout of the report . . .

TYPE: Y (RETURN)

If you do not want a printout . . .

TYPE: N (RETURN)

If you enter N to the above question, you will see the following prompt:

USE AN 80 COLUMN BOARD (Y/N)

If you are *not* working on an Apple IIe computer, you will be asked to indicate the slot in which the board is located. On a IIe, the program will locate the board automatically.

If you have an 80 column board, you may answer Y to this prompt.

If you do not have an 80 column board . . .

TYPE: N (RETURN)

Format Selection

The following prompt should be on your screen:

PLEASE INSERT FORMAT DISK INTO DRIVE 2 AND
PRESS (RETURN)

You may insert a blank, initialized disk or you may insert a Format disk you have already used.

Place the Format disk into drive #2 and . . .

PRESS: (RETURN)

If you have been following the practice example, you will see the following screen:

```
          FORMAT SELECT:
1 PRACTICE FORMAT.M-F
2 CREATE A NEW FORMAT
3 CONTINUE WITH MORE FORMATS
4 CATALOG ANOTHER DISK
5 RETURN TO MENU
SELECT (1-5)?
```

Option #1 refers to the format which you created during List/Report. Any other formats which were created through List/Report or Search will also appear on this menu.

NOTE: The .M-F appended to the format name is an abbreviation for MONITOR-FORMAT. If at the beginning of this routine you chose *not* to send the report to the printer, only those formats which were created for monitor display will be listed. If you chose to print at the beginning of this routine, only those formats previously created for printing will be

listed. The abbreviation .P-F follows the PRINTER FORMAT names.

If you wish to use one of the formats already created . . .

ENTER: the corresponding option number.

If you do not have a format already created, or you wish to create a new one, you may CREATE A NEW FORMAT. You may also CATALOG ANOTHER DISK which contains more formats and choose one of those.

For the practice example, you will be using the Practice Format . . .

TYPE: 1 (RETURN)

NOTE: For instructions on creating a new format, see the List chapter, pages 123-132.

After choosing a format, or designing a new one, you are ready to enter the search information.

PERFORMING THE SEARCH

You should always plan which field you wish to search and the order in which you wish the records to appear. In the example, you will be searching the DUE DAY field and producing a separate listing for each MONTH. That is, all of the records in which the Due Day is in January will be in one listing, February in another listing, etc.

Search Field

The following prompt should be on your screen:

PRESS (F) TO VIEW FIELDS
SEARCH WHICH FIELD (1-7)

Indicate which field you wish to search. If you do not remember the field number . . .

TYPE: F (RETURN)

A listing of the fields will be displayed. When you find the field you wish to search, note the field number and then . . .

PRESS: (RETURN)

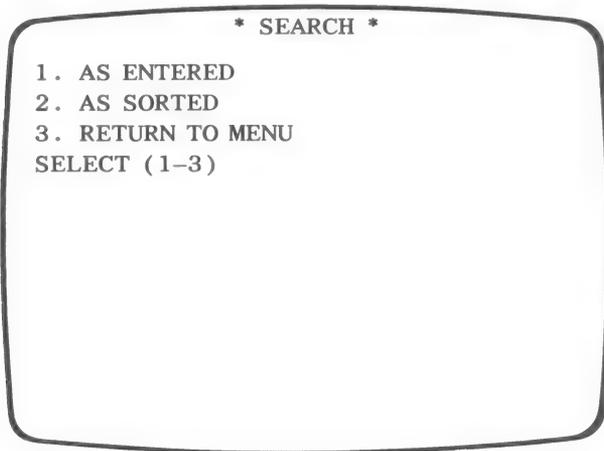
The previous prompt will reappear.

Because you want to search the DUE DAY field . . .

Type: 7 (RETURN)

Record Order

The following menu should now be on the screen:



Option #1 will display (or print) the records, within each listing, in the order in which they were entered.

Option #2 will display (or print) the records, within each listing, in sorted order. This order is determined by the sort presently in memory. Remember that each time you use the Sort routine, the program creates a file containing the sorted record order. (See the chapter on the Sort routine, page 135)

Option #3 will return you to the MENU SELECTION LIST.

NOTE: If you have been following the manual, the correct sorted order will exist already. Otherwise, RETURN TO MENU and then choose option #3 Sort. Turn to the Sort chapter and follow the instructions for sorting your records on field #7.

For the example...

CHOOSE: option #2 As Sorted from the RECORD ORDER MENU. Press (RETURN).

Subheading Option

The following prompt should be on your screen:

USE SUBHEADINGS (Y/N)

Answering Y to the prompt enables you to label each group of records.

Since you will be using subheadings in the example...

TYPE: Y (RETURN)

Indexing Option

The following prompt will appear:

DO YOU WISH TO INDEX FIELD 7 (Y/N)

See the section named INDEX SEARCH FIELD, page 156, for details.

At this time you will not be indexing field #7 so you must...

TYPE: N (RETURN)

Search Type

The following menu should be on the screen:

* SEARCH *

SELECT TYPE OF SEARCH

1. FULL/EQUAL TO
2. FULL/NOT EQUAL TO
3. PARTIAL/EQUAL TO
4. PARTIAL/NOT EQUAL TO
5. SUBSTRING/EQUAL TO
6. SUBSTRING/NOT EQUAL TO

SELECT (1-6)

See the Inspect/Change chapter, page 66, for an explanation of FULL, PARTIAL and SUBSTRING searches.

Note that you are given the option of finding entries which are either EQUAL TO or NOT EQUAL TO the data you enter.

Remember that the Due Day field entries are in the form, mm/dd/yy (month, day, year). Therefore, you need to search the BEGINNING of the field for the month. To do this you must run a PARTIAL/EQUAL TO search. You will then enter three search items, one for each month.

CHOOSE: option #3 Partial/Equal To. Press (RETURN).

SUBHEADINGS AND SEARCH ITEMS

The following screen should now be displayed:

* SEARCH *

PRESS (CTRL-B) WHEN FINISHED

ENTER SUBHEADINGS

The first subheading should represent the kind of records included in the first listing. An appropriate subheading for the first listing is JANUARY BILLS.

TYPE: JANUARY BILLS (RETURN)

The following prompt will appear:

ENTER SEARCH ITEM 1

TYPE: 01 (RETURN)

The prompt for subheading 2 will appear:

ENTER SUBHEADING 2

TYPE: FEBRUARY BILLS (RETURN)

When prompted to . . .

ENTER SEARCH ITEM 2

TYPE: 02 (RETURN)

For SUBHEADING 3 . . .

TYPE: MARCH BILLS (RETURN)

For SEARCH ITEM 3 . . .

TYPE: 03 (RETURN)

When you finish making the entries, your screen should look like this:

* SEARCH *

PRESS (CTRL-B) WHEN FINISHED

ENTER SUBHEADING 1

JANUARY BILLS

ENTER SEARCH ITEM 1

01

ENTER SUBHEADING 2

FEBRUARY BILLS

ENTER SEARCH ITEM 2

02

ENTER SUBHEADING 3

MARCH BILLS

ENTER SEARCH ITEM 3

03

ENTER SUBHEADING 4

NOTE: The maximum number of entries allowed, equals the number of records in your data base.

When the prompt to enter SUBHEADING 4 appears, indicate that there are no other search items . . .

TYPE: (CONTROL-B)

THE GENERATED REPORT

The program will process the information, search the records, and display the report.

If you are displaying to the screen, or are printing single sheets, you will have to press C (RETURN) to advance the screen. If you are printing the reports on continuous form, the page will advance automatically; you do not need to press C to continue.

If there are justified fields printed in your report, field totals will appear at the end of each listing and at the end of the entire report. If you do not want the field totals calculated, you must enter the Printer Control, option #18 on the MENU SELECTION LIST. Then choose option #15 Total Justified

Fields from the **PRINTER CONTROL MENU** and change the default value to **NO**. (See the **PRINTER CONTROL CHAPTER**, page 100)

When all of the reports have been displayed, the following prompt will appear on the screen:

SELECT (C)OPIES (E)ND (R)ESTART

Select **C** and you will be prompted to enter the number of copies you desire. You may make up to 25 copies.

Select **E** to end the routine and return to the **MENU SELECTION LIST**.

Select **R** to begin the Search routine again.

TYPE: E (RETURN) to return to the **MENU SELECTION LIST**.

INDEX SEARCH FIELD

Remember the prompt:

DO YOU WISH TO INDEX FIELD 7 (Y/N)

If you had answered **Y** to this prompt earlier in the Search Routine, a categorized report would be automatically generated.

Imagine your data base has one of the following dates in field #7 of each record:

01/01/83

01/02/83

01/14/83

02/01/83

02/22/83

03/02/83

If you run an **INDEX** on field #7 and ask for subheadings, your report will have the following format:

NOTE: The actual record data will appear, not just the record numbers.

- 01/01/83 -

RECORD 1
RECORD 15
RECORD 9
RECORD 6

- 01/02/83 -

RECORD 2
RECORD 12
RECORD 8

- 01/14/83 -

RECORD 13
RECORD 5

- 02/01/83 -

RECORD 14

- 02/22/83 -

RECORD 4
RECORD 10

- 03/02/83 -

RECORD 11
RECORD 3
RECORD 7

NOTE: This format is based on a 15 record data base. The records within each listing will be sorted if you choose AS SORTED prior to answering the indexing prompt.

IMPORTANT: If you are indexing a large data base, you MUST SORT YOUR FILE ON THE SEARCH FIELD BEFORE ATTEMPTING TO INDEX. See the following section for details on working with a large data base.

USING SEARCH WITH LARGE FILES

When working with large data bases the maximum number of search items allowed may be less than the number of records in your data base. This is due to computer memory limitations.

The program will prompt you with information regarding the number of search items you may enter. This prompt appears AFTER you enter the field you wish to search.

The prompt you receive will take one of two forms:

(FORM I)

QUICK SEARCH:

1. 100 SEARCH ITEMS – NO SUBHEADINGS
2. 50 SEARCH ITEMS – WITH SUBHEADINGS

STANDARD SEARCH:

1. 150 SEARCH ITEMS – NO SUBHEADINGS
2. 75 SEARCH ITEMS – WITH SUBHEADINGS

If this prompt appears, you may choose QUICK SEARCH which will perform noticeably more quickly but permits you fewer search items. If you have to have more search items than quick search provides, choose STANDARD SEARCH but be prepared for the program to take longer to process. Notice that if you do not need to have subheadings on your report, you can enter twice as many search items.

(FORM II)

1. 180 SEARCH ITEMS – NO SUBHEADINGS
2. 90 SEARCH ITEMS – WITH SUBHEADINGS

If this prompt appears, a standard search will be performed and you are limited to the number of search items indicated. You may still indicate whether or not you need to enter subheadings.

(FORM III)

1. 0 SEARCH ITEMS – NO SUBHEADINGS
2. 0 SEARCH ITEMS – WITH SUBHEADINGS

If this prompt appears, you may or may not be able to perform a search on 1 field. If you see, "OUT OF MEMORY," your page size exceeds memory capacity. Return to the MENU SELECTION LIST and use option #18 Printer Control. Reduce the number of lines per page and/or the column width. Then return to the Search routine to continue.

If you plan on using the INDEXING option and one of the above prompts appears, be certain that you have SORTED YOUR RECORDS ON THE DESIGNATED SEARCH FIELD before using this routine. As long as you have done this, the program will successfully index your entire data base. Also, if you are going to INDEX your data base and prompt FORM I appears, choose one of the QUICK SEARCH options; your report will be processed much more quickly.

SUMMARY

The Search routine allows you to select which records to list. You can search for a number of items and have the listing appear in sections. Each section represents a new search item. You also have the opportunity to label each section.

First, you must provide a format which you wish to use for the reports. You may use a format previously created, or you may create a new one through this routine. (See the List chapter for instructions on creating a format.)

After creating or choosing a format, you must indicate what type of search you wish to run and the field you wish to have searched. You are then given the option of using subheadings.

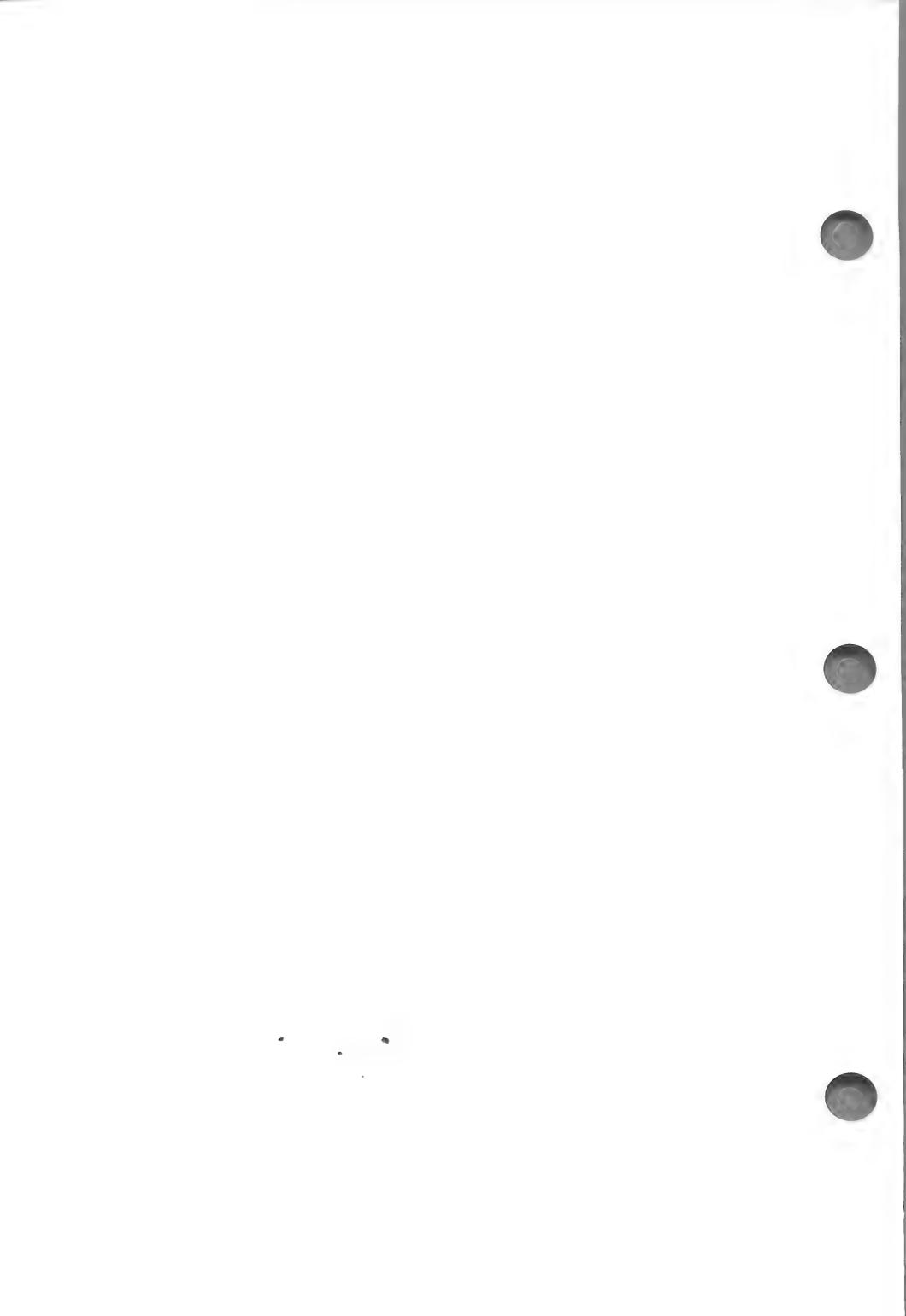
If you opt for subheadings, you will be prompted to enter the heading you desire and the item for which to search.

If you have not chosen subheadings, you only need to enter the search items.

This routine also gives you the added feature of automatically generating an indexed report. You only need to supply the field to be indexed and the program will do the rest.

Providing your data base is not too large, you may enter as many search items and subheadings as there are records in your data base. If your data base is quite large, you will be told how many search fields you are allowed.

The program will generate the report.



MASTER SEARCH

Master Search creates a file of selected records which can be used with other routines. As in the Search routine, the records are selected according to criteria you set but Master Search allows you to set much more exacting criteria.

You can search for values greater than a certain constant. You can search for records in which one field value matches another field value and much more.

The set of criteria you establish while using Master Search is referred to as a **filter**.

A record is said to **pass through** a filter if it meets the requirements you set.

The group of records which passes the filter is said to **survive** and can be put into the Survivor List. The records in this list can be used with any routine which reads, displays, and/or edits record data.

You may create and store a number of filters. Any time you want to use the records which survive the filter, you must load the desired filter and then process the data base. The Survivor List will contain the desired records and can be used with other routines.

IMPORTANT: If you want to **rewrite** the data base, and/or **sort** the records, run the RECONFIGURE, REWRITE routine and then run the SORT routine, **BEFORE** you process the data base through a filter. If you have sorted your data base after creating a Survivor List through Master Search, return to Master Search. **LOAD** the desired filter and **PROCESS THE DATA BASE** before working with the Survivor List.

If you process the filter first, and then rewrite the data base or sort your records, the records contained in the Survivor List will *not* be the records you anticipated.

EXAMPLE FOR CREATING AND RUNNING A NEW FILTER

For the example, you will be designing a filter which will let pass those records in which the Due Day is equal to or later than 02/01/83 and Amt Due is greater than 200.00.

You will then edit the filter and add a further condition. The records which pass must also have an Amt Due value which is less than or equal to 500.00.

You will then save the filter.

And finally, you will process the data base through the filter.

In general, the steps used in the example are as follows:

- 1) Design the first level of the filter (FIELD #7 >= 02/01/83).
- 2) Design the second level of the filter (FIELD #6 > 200.00).
- 3) Leave room in the filter to add levels later.
- 4) Edit the filter and add a level (FIELD <= 500.00)
- 5) Save the filter.
- 6) Process the data base through the filter, creating a Survivor List.
- 7) Return to the MENU SELECTION LIST to use the Survivor List with another routine.

MASTER SEARCH PROCEDURE

CHOOSE: option #14 Master Search from the MENU SELECTION LIST.

The following menu will appear:

* MASTER SEARCH *

DATABASE: BILLS TO BE PAID

OPTIONS:

- 1) CONSTRUCT FILTER
- 2) EDIT FILTER
- 3) LOAD FILTER
- 4) SAVE FILTER
- 5) PROCESS A DATA BASE
- 6) PRINT OUT FILTER
- 7) LIST FIELD NAMES
- 8) RETURN TO MENU

SELECT:

Option #1 allows you to design a new filter.

Options #2-#7 are used after you have already created filters. They will be discussed later in the chapter.

Option #8 returns you to the MENU SELECTION LIST.

CHOOSE: option #1 Construct filter. Press (RETURN)

Before you use this routine you must plan exactly what criteria you want your filter to contain. For the practice example, you will construct a filter which will let pass only those records which meet the following two criteria:

1) the DUE DAY field contains a date equal to or later than 02/01/83

AND

2) the value in the AMT DUE field is GREATER THAN \$200.00.

Comparison Operators

The following COMPARISON OPERATOR MENU should now be on your screen:

```

* MASTER SEARCH *
-----
CONSTRUCT FILTER - CNTRL-F=FIELD NAMES
COMPARISON LEVEL=1      TYPE: IF
      SELECT COMPARISON OPERATOR:
1)    FIELD      =      CONSTANT
2)    FIELD      >      CONSTANT
3)    FIELD      <      CONSTANT
4)    FIELD      >=     CONSTANT
5)    FIELD      <=     CONSTANT
6)    FIELD      <>     CONSTANT
7)    FIELD      ><     CONSTANT
8)    FIELD      =      FIELD
9)    FIELD      >      FIELD
10)   FIELD      <      FIELD
11)   FIELD      >=     FIELD
12)   FIELD      <=     FIELD
13)   FIELD      <>     FIELD
      SELECT:

```

The above options determine two things:

- a) whether you will be comparing the data in a field to a constant or the data in a field to the data in another field
- b) what relationship the two pieces of information must bear in order to pass through the filter.

The options are defined as follows:

- 1) = EQUAL - Let pass only those records whose field entry equals the designated constant.
- 2) > GREATER THAN - Let pass only those records in which the field entry is greater than (in the case of dates, later than) the constant.
- 3) < LESS THAN - Let pass only those records in which the field entry is less than (or earlier than) the constant.

- 4) \geq GREATER THAN OR EQUAL TO – Let pass only those records in which the field entry is either the same as, or greater than the constant.
- 5) \leq LESS THAN OR EQUAL TO – Let pass only those records in which the field entry is either the same as or less than the constant.
- 6) \neq NOT EQUAL TO – Let pass those records in which the field entry does not equal the constant.
- 7) $><$ RANGE – Let pass those records in which the field entry falls between two values. For example, you can design a filter which will let pass all of those records whose AMT DUE field exceeds 100 but is less than 500.

The remaining six options are read in the same manner as the first six, except that a field entry will be compared to another field entry of the same record.

In the first comparison of the example, you are looking for data which is GREATER THAN OR EQUAL TO the CONSTANT 02/01/83...

CHOOSE: option #4. Field \geq Constant. Press (RETURN).

Comparison Types

You will see the following screen:

```

* MASTER SEARCH *
-----
CONSTRUCT FILTER - CNTRL-F=FIELD NAMES
COMPARISON LEVEL=1      TYPE: IF
      SELECT COMPARISON TYPE:
                1) ALPHA FULL
                2) NUMERIC
                3) DATE
                4) ALPHA-PARTIAL
                5) ALPHA SUB-STRING
      SELECTION:
```

You must tell the program what kind of data is contained in the field you wish to search.

See the Inspect/Change chapter, page 66, for the definitions of the terms full, partial and substring.

ALPHA - Choosing either option 1, 4 or 5, indicates to the program that a word is contained in the designated field. NOTE: A group of characters, like zip codes, serial numbers, etc. are also considered ALPHA type data; the numbers contained in such entries cannot be used in calculations. Alpha-partial is available with all comparison operators except #7. Alpha-substring is available for use with comparison operators #1, #6, #8, and #13.

NUMERIC - Fields designated as numeric should contain numbers only. If an alpha character appears in the first position of a numeric field, the field will be given a value of zero. If the field contains an alpha character in any other position, that character, and any others following it, will be ignored. (NOTE: +, -, \, E

will not be ignored) (See the explanation of VAL functions in your Applesoft manual.)

DATE: Fields designated as date fields must contain a date entered in the following format: eight digits and two delimiters dividing each part of the date, e.g., 01/02/83. Although the delimiter need not be a slash in this routine, you are advised to use a slash when entering data; other routines require that dates be divided by slashes.

Since in the example, you are comparing a DATE field . . .

CHOOSE: option #3 Date. Press (RETURN).

The following screen will appear:

```
* MASTER SEARCH *  
-----  
CONSTRUCT FILTER - CNTRL-F=FIELD NAMES  
PRIMARY FIELD #  
-----
```

The program is asking you to enter the field you wish to compare. If you do not remember the field number, press (CONTROL-F) to view the fields.

Remember that in the example, the first comparison involves the DUE DAY field . . .

TYPE: 7 (RETURN)

NOTE: Had you been comparing a field to another field, this prompt would have been followed by another prompt asking for the SECONDARY FIELD NUMBER. You would enter the

field whose data needed to match the data of the PRIMARY FIELD.

When comparing a field to a constant the following prompt will appear . . .

ENTER COMPARE CONSTANT

DATE

TYPE: 02/01/83

MULTIPLE LEVELS

The following screen is now displayed:

```
* MASTER SEARCH *  
-----  
CONSTRUCT FILTER - CNTRL-F=FIELD NAMES  
COMPARISON LEVEL=2  
SELECT COMPARISON:  
0) NOP FUNCTION  
1) AND FUNCTION  
2) OR FUNCTION  
3) AND REPEAT FUNCTION  
4) OR REPEAT FUNCTION  
  
5) END OF FILTER  
6) REVIEW FILTER  
SELECTION:
```

This menu is giving you the option of entering another comparison or ending the filter. For the example, you will be adding a comparison.

Each new comparison constitutes a **level**. Each time you add a comparison level, you further specify the records which will pass. You are able to create up to 100 levels.

NOTE: You cannot insert a level once a filter has been created. If you foresee needing to add more levels at a later date, you are advised to use the NOP function. Otherwise, you will have to create an entirely new filter when you need to add a level.

The options displayed on the screen have the following function:

NOP FUNCTION – NOP stands for NO OPERATION. If you can imagine a future need to add or insert a level you should enter a NOP level; this acts as a place holder. While the level remains a NOP, it has no effect upon the passing of records.

AND FUNCTION – This function will narrow down the number of records which will pass through the filter. Only those records which meet the requirements of the previous level, AND the level you are about to create, will pass. For example, you may wish to search for only those companies whose bills are due after February 08, 1983 AND to whom you owe more than \$200.00.

OR FUNCTION – By using the OR option, you can increase the number of records which will pass the filter. Any record which meets EITHER the previous requirement, OR the requirement you are about to create, will pass. You may, for example, search for those companies whose bills are due on or after 02/08/83 OR to whom you owe more than 300.00.

AND/OR REPEAT – If the comparison at the new level differs from the previous level only in the *constant or secondary field*, choose this option. You will only need to supply the comparison field or constant. You will not need to re-enter the original field entry or the comparison type.

For example, if your first level reads:

```
1 IF FLD #7 = '02/01/83'
```

Use the OR REPEAT with the constant 02/15/83 and the filter will look like this

```
1 IF FLD #7 = '02/08/83' OR  
2 FLD #7 = '02/15/83'
```

END OF FILTER – When you have finished entering all of the necessary levels, choose option #5.

REVIEW FILTER – If you wish to see how your filter looks so far, choose option #6.

IMPORTANT: When the program processes a multi-level filter, it will process until one of the following events occur:

- 1) all of the records fail one of the criteria and the next connector is an **AND**
- 2) all of the records pass one of the criteria and the next connector is an **OR**.

CHOOSE: option #1 And Function to enter a second level joined by **AND**. Press (RETURN).

ENTERING FILTER LEVELS

The **COMPARISON OPERATOR MENU** should be on your screen.

You are now ready to enter the information for the second filter level:

AMT DUE field (#6) is **GREATER THAN** 200.00

CHOOSE: option #2, **FIELD > CONSTANT**. Press (RETURN).

The **COMPARISON TYPE MENU** will appear.

Note that at the top of the menu you are told the level with which you are working and the connector between this level and the previous one.

Because you are designing a level in which the constant and the field data are numbers, the comparison type will be **NUMERIC**.

CHOOSE: option #2 **Numeric**. Press (RETURN)

Once again you are being asked for the **PRIMARY FIELD NUMBER**.

TYPE: 6 (RETURN)

The following prompt will appear:

ENTER COMPARE CONSTANT
NUMERIC

TYPE: 200.00 (RETURN)

Next insert a NOP as a place holder. It will be given a value when you edit the filter.

CHOOSE: option #0 NOP. Press (RETURN).

The menu remains on the screen.

CHOOSE: option #6 Review Filter.

It should look like this:

```
IF FLD #7 >= '02/08/83'  
AND FLD #6 > 200.00  
NOP  
END_____
```

PRESS: the SPACE BAR

You will return to the previous menu.

CHOOSE: option #5 End of Filter to end the filter. Press (RETURN).

The following prompt will appear:

ENTER FILTER NAME (UP TO 15 CHARS)

NAME: _____

TYPE: PRACTICE FILTER (RETURN)

IMPORTANT: Naming the filter does not save the filter to disk. If you wish to save the filter, you can do so later in the routine.

The following screen shows you the complete filter:

```

* MASTER SEARCH *
-----
CONSTRUCT FILTER - CNTRL-F=FIELD NAMES
FILTER NAME:PRACTICE FILTER
1 IF FLD #7 >= '02/01/83'
2 AND FLD #6 > '200.00'
3 NOP
4 END -----
                <SPACEBAR>
```

PRESS: The SPACE BAR

The **OPTIONS MENU** is on the screen. Each option #2-#7 will be discussed individually.

EDITING THE FILTER

CHOOSE: option #2 Edit Filter. Press (RETURN).

When the filter reappears, enter 3 as the level which you will edit.

The filter will appear on the screen, followed by the line:

WHICH LEVEL TO EDIT

NOTE: The last level of the filter reads . . .

```
4 END-----
```

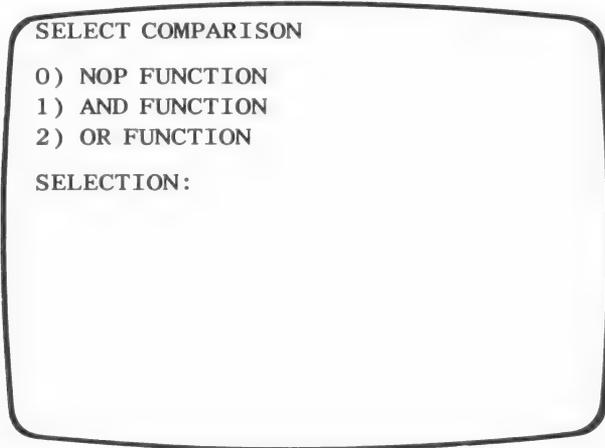
This is part of the filter itself but the level *cannot* be edited. This level indicates to the program where the filter ends.

You will edit level 3.

TYPE: 3 (RETURN)

NOTE: You may edit any level (except END——); it does not have to be a NOP level.

The following menu will appear:



```
SELECT COMPARISON
0) NOP FUNCTION
1) AND FUNCTION
2) OR FUNCTION
SELECTION:
```

You must tell the program what connector you wish to use between the current level (#3) and the previous level.

CHOOSE: option #1 And Function. Press (RETURN).

The COMPARISON OPERATOR MENU will appear:

CHOOSE: option #5 Field <= Constant. Press (RETURN).

The COMPARISON TYPE MENU will appear:

CHOOSE: #2 Numeric. Press (RETURN).

You will be prompted to enter the PRIMARY FIELD:

TYPE: 6 (RETURN)

When prompted to enter the constant . . .

TYPE: 500.00

The filter which you have just created will let pass only those records in which *all three* conditions are satisfied. The date must be greater than or equal to February 1, 1983, AND field #6 must

be greater than 200.00 AND field #6 must be less than or equal to 500.00.

When the review of the filter reappears and you no longer have any changes to make...

PRESS: (RETURN).

The filter OPTIONS MENU will reappear.

You may make a PRINTOUT of the filter by choosing option #6. Keep this printout to use for reference.

SAVING THE FILTER

Although you have designed and named the filter, it is not saved until you choose option #4 from the OPTIONS MENU.

CHOOSE: option #4 Save Filter. Press (RETURN).

NOTE: You do not have to save the filter to disk in order to use it to create a Survivor List. (A Survivor List is created by PROCESSING THE DATA BASE). If you do not save the Filter format, you cannot reuse the filter.

The following prompts are on your screen:

S)AVE FILTER AS:PRACTICE FILTER

R)ENAME FILTER

SELECT:

Enter S to save the filter under the original name.

Enter R to rename the filter.

HINT: You may use the rename option after editing a previously created filter. In this way you can save the original as well as the new filter.

For the practice example...

TYPE: S (RETURN)

PLEASE INSERT
FORMAT DISK
INTO DRIVE 2
AND PRESS (RETURN)

After you insert the Format disk, the filter will be saved and the following prompt will appear:

PLEASE INSERT
BILLS TO BE PAID VOL 1
INTO DRIVE 2
AND PRESS (RETURN)

Place the **BILLS TO BE PAID**, Data disk into drive #2 and ...

PRESS: (RETURN)

The **OPTIONS MENU** will reappear.

IMPORTANT: The filter will be saved after you enter S but a Survivor List will *not* be created.

In order to create a Survivor List, you must use option #5 Process Data Base.

PROCESS DATA BASE

CHOOSE: option #5 Process the Data Base, thus creating a Survivor List. Press (RETURN).

The following message will be displayed.

* PREPARING FILTER FOR PROCESSING *

* PLEASE WAIT *

After processing is complete, and each record has been read, the following message will appear:

SAVING SURVIVOR LIST

TO DISK

3 SURVIVORS OF

FILTER: PRACTICE FILTER

PRESS (RETURN)

NOTE: The number of "survivors" will vary with the data in your records.

PRESS: (RETURN)

The following screen will appear:

==== A MICRO LAB DATABASE ====

OUTPUT PROCESSOR

- 1) STANDARD
- 2) MICRO LAB CUSTOM
- 3) RETURN TO MENU

SELECT :

This screen should look familiar to you. It also appears in the List/Report and in Search routines. If you want to print or display the records in the Survivor List you may choose option #1 or option #2. For instruction on creating a report, see the List/Report chapter, starting with the Output Processor section (pages 121-134).

If you do not want to create a report at this time, you may return to the MENU SELECTION LIST. Then, access one of the routines with which a Survivor List can be used. Choose the Survivor List option from the RECORD SELECTION MENU. The routine will use the records presently in the Survivor List.

NOTE: the records contained in the Survivor List will be changed as soon as one of the following events occurs:

- 1) You use the List routine and choose AS ENTERED or AS SORTED from the RECORD SELECTION MENU
- 2) You run another filter from Master Search by LOADING A FILTER and PROCESSING THE DATA BASE.
- 3) The data base is sorted.
- 4) The data base is rewritten through Reconfigure.

For the example, you will not generate a report. Therefore . . .

CHOOSE: option #3 Return to Menu from the OUTPUT PROCESSOR MENU.

You will be prompted to . . .

LOAD PROGRAM DISK INTO DRIVE #1
THEN PRESS 'RTN'

Check that the Report disk is still in drive #1 and . . .

PRESS: (RETURN)

See the following section for instructions on processing a new filter and thus placing a new set of records into the Survivor List.

REUSING A FILTER

In general, the steps to follow when you wish to process the data base through a previously created filter are as follows:

- 1) CHOOSE: Option #14 Master Search from the MENU SELECTION LIST.
- 2) CHOOSE: Option #3 Load a Filter from the OPTIONS MENU.
- 3) CHOOSE: The filter you wish to run.
- 4) CHOOSE: Option #5 Process Data Base from the OPTIONS MENU.

The records which pass through the filter are now contained in the Survivor List. You can either directly create a report with those records, or return to the MENU SELECTION LIST to use the Survivor List with another routine.

LOADING A PREVIOUSLY CREATED FILTER

Each time you wish run a new filter you must use the Master Search routine to load the appropriate filter.

CHOOSE: option #14 Master Search from the MENU SELECTION LIST.

When the OPTIONS MENU appears . . .

CHOOSE: option #3 Load filter.

You will be prompted to insert the Format disk.

Choose the Format disk, which contains the Filter format you wish to use, and insert it into drive #2.

PRESS: (RETURN)

You will see the following SELECT FILTER MENU:

- 
1. PRACTICE FILTER
 2. CONTINUE WITH MORE FORMATS
 3. CATALOG ANOTHER DISK
 4. SELECT ANOTHER OPTION

SELECT (1-4)?

NOTE: If there is more than one Filter format on the Format disk, all of the filter names will be on the menu. If all of the names cannot fit on one screen, use the CONTINUE WITH MORE FORMATS option to view the remaining names. The last three options will be renumbered.

Option #2 allows you to view the names of more filters contained on the disk.

Option #3 allows you to insert a new disk and see if the filter you wish to use is contained on it.

CHOOSE: option #1 (or whatever number corresponds to the filter you wish to use).

The following prompt will appear:



PLEASE INSERT
BILLS TO BE PAID VOL 1
INTO DRIVE 2
AND PRESS (RETURN)

Insert the BILLS TO BE PAID, Data disk into drive #2 and . . .

PRESS: (RETURN)

Processing Data Base

IMPORTANT: After the filter has been loaded, you must choose option #5 to process the data base, creating a Survivor List.

CHOOSE: Option #5 Process Data Base. Press (RETURN)

The records will be run through the filter.

You will be told how many records survived.

PRESS: (RETURN)

The **OUTPUT PROCESSOR MENU** will appear.

You may choose to create a report using the records in the Survivor List. You may also return to the **MENU SELECTION LIST** and choose another routine which you can use with the records in the Survivor List.

At this time, choose option #3 Return to Menu to return to the **MENU SELECTION LIST**.

SUMMARY

Master Search allows you designate a set of records which you wish to put into a Survivor List.

A filter which establishes a set of criteria is used to select the desired set of records.

When designing a filter, you must establish the following:

- 1) a field to search
- 2) an item for which to search
- 3) the relationship between the item and the field entry, e.g., equal to, greater than, less than.
- 4) the type of data contained in the field you are searching.

NOTE: The item of comparison can either be a constant or another field.

The program will ask you to establish the relationship between the search item and field, before asking you for the actual field number and item of comparison.

You may enter up to 100 comparisons per filter. Each comparison is called a level.

The levels are connected by either the AND function or the OR function. Using the AND function narrows down the number of records which will "survive;" only records which meet both requirements will pass. The OR function has the opposite effect, allowing records which pass either requirement to survive.

NOTE: Use the NOP (no operation) function as a space holder if you anticipate needing to add comparisons at a later date. You will not be able to change the number of levels in a filter but you will be able to edit the levels. You may enter additional comparisons by establishing a NOP level when the filter is first created and then editing the level when the need arises.

After establishing the filter criteria, you can save the filter. Saving the filter only saves the set of criteria for use later in the program.

To create a Survivor List you must choose the PROCESS THE DATA BASE option from the OPTIONS MENU.

To run a previously created filter, you must do the following:

- 1) CHOOSE: Option #14 Master Search from the MENU SELECTION LIST.
- 2) CHOOSE: Option #3 Load Filter from the OPTIONS MENU.
- 3) CHOOSE: The filter you wish to run.
- 4) CHOOSE: Option #5 Process a Data Base from the OPTIONS MENU.

THINGS TO REMEMBER:

- 1) If after you create a Survivor List with Master Search, you SORT the records or REWRITE the data base, you must follow the above four steps to reprocess the data base, and recreate the Survivor List.
- 2) Any time you wish to work with a previously created filter, you must load that filter by using the LOAD FILTER option on the OPTIONS MENU. After the filter is loaded, you may edit it, save it again under another name, make a printout of it, or process the data base with it.

- 3) A Survivor List is created through Master Search when you PROCESS THE DATA BASE. If you exit the routine without PROCESSING, you have *not* created a Survivor List.
- 4) After you create a filter, it only remains in memory until one of the following events occurs:
 - a) You construct a new filter.
 - b) You load a previously saved filter.
 - c) You process the data base, creating a Survivor List.
 - d) You exit the routine and return to the MENU SELECTION LIST.

Unless you have **saved** the filter, after one of the above four events occurs, you cannot reuse the filter you created.

- 5) You can only have one Survivor List in memory at one time. Every time you use the List/Report routine and select As Sorted or As Entered from the MENU SELECTION LIST, a new Survivor List is created. Every time you process the data base through a filter in Master Search, a new Survivor List is created.

RECONFIGURE

Reconfigure is a very powerful routine, enabling you to do the following:

- 1) Rewrite your data file, removing any deleted records. Remember that when you delete records (using MENU SELECTION LIST option #6), all of the record data is removed and replaced by @ signs. The record still remains on the disk until you rewrite the file.
- 2) Recreate your data base on a new disk, transferring any or all of the records. You may also add fields to the data base on the new disk.
- 3) Create an entirely new file, and then transfer pertinent data from another file. You can select the records and the fields of data you wish to transfer.
- 4) Append records onto an already existing data base by transferring the data from records contained in a different data base. All of the original records will remain on the data base and the new ones will be added.

NOTE: You will need two blank disks, one for the Straight Transfer and one for the Create a New file.

Entering the routine

IMPORTANT: Back up your data disk before using the Reconfigure routine. Be sure that there is a write protect tab on your program disks before continuing. (Do not write protect your data disks.)

CHOOSE: option #7 Reconfigure from the MENU SELECTION LIST. Press (RETURN).

You will see the following menu:

```
1. REWRITE SOURCE FILE
2. STRAIGHT TRANSFER
3. CREATE A NEW FILE
4. APPEND TO AN EXISTING FILE
5. RETURN TO MENU

SELECT (1-5)
```

Each of the above options will be discussed individually.

REWRITE

CHOOSE: option #1 to rewrite your file. Press (RETURN).

The program will automatically search through all of the records and remove the deleted ones.

Rewriting a file may affect your data base in the following ways:

- 1) If your original data base is contained on two volumes, it is possible that after rewriting takes place all of the records will fit on one volume. When this is the case, the program will automatically write the entire file on the first volume. The program will prompt you to switch disks when necessary. If after rewriting, all of the records are contained on one volume the program will inform you of the change.

NOTE: Even though the records have been transferred to the first volume, they still exist on the second volume. The second volume disk, which still contains data, should be initialized, before using the disk for a new purpose.

2) Any sort you have run before rewriting the file will *no longer apply*. You must rerun the sort after the rewriting is complete.

You will be returned to the MENU SELECTION LIST after the rewriting is finished.

IMPORTANT: Do not use the Rewrite option of Reconfigure in an attempt to fix a bad file. Any bad records will be copied. See Repair/Rename for dealing with a bad file.

STRAIGHT TRANSFER

HINT: You may use the STRAIGHT TRANSFER routine to avoid bad records. If you are unable to read certain records due to a physically damaged data disk, use Reconfigure to transfer all of the good records. For example, if your original data base has 100 records and records 5-10 are bad, transfer records 1-4 and 11-100. You will then only need to re-enter five records.

CHOOSE: option #7 Reconfigure from the MENU SELECTION LIST. Press (RETURN).

CHOOSE: option #2 from the next menu to perform a STRAIGHT TRANSFER. Press (RETURN).

The following prompt will appear:

INSERT A BLANK DISK
INTO DRIVE 1

PRESS (I) TO INITIALIZE
OR PRESS (RETURN) TO RETURN TO MENU

You are being prompted to insert a blank disk into **drive #1**. The new data base will be contained on this disk.

Label the blank disk DATA DISK - BILLS TO BE PAID 1

Remove the Utility disk from the drive and insert the new data disk.

To initialize the disk...

TYPE: I (RETURN)

The following prompt will appear:

THIS WILL DESTROY ALL DATA
ON DRIVE 1
ARE YOU SURE (Y/N)

You are being asked to confirm that you want the disk initialized...

TYPE: Y (RETURN)

The prompt, INITIALIZING, will flash on the screen while the program is working.

NOTE: Even if your disk is already initialized, the program will initialize the disk again. This is simply a precautionary measure.

After initialization, you will see the following prompt:

ENTER FILE NAME

You must enter a name for the new file. The name of the new file must be different from the name of the original file.

NOTE: The new file to be created is referred to as the **TARGET FILE**. The original file to be transferred is referred to as the **SOURCE FILE**.

For the example, you will enter the name **BILLS TO BE PAID 1**.

TYPE: **BILLS TO BE PAID 1** (RETURN)

The following prompt will appear:

DO YOU WISH TO ADD ANY EMPTY FIELDS
TO **BILLS TO BE PAID 1** (Y/N) ?

If you wish to add fields to the new data file, enter **Y**.

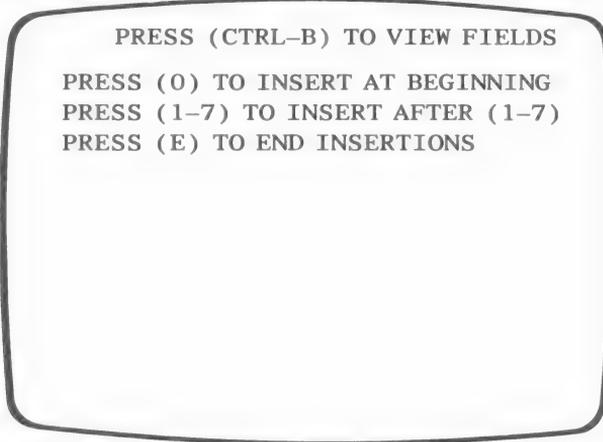
These new fields will be empty, that is, they will not contain data. After Reconfigure is complete, you can enter data into these fields, using the Update routine.

For the example, you will add a phone number field to the target file. Therefore, you should . . .

TYPE: **Y** (RETURN).

Positioning New Fields

The following Field Insertion screen should be displayed:



You must indicate where in the data base you wish the new field to appear.

If you want to view the field names and numbers . . .

TYPE: (CONTROL-B) (RETURN)

Enter 0 if you want the new field to be the first field in the data base.

If you want the new field to be positioned between two existing fields, enter the field number which **precedes** the new field position.

For example, if you want the new field to appear between fields 2 and 3, enter 2. The new field will be assigned the number 3. The fields below will be renumbered.

To position the new field at the end of the data base, enter the number corresponding to the last existing field; in the example, that number is 7.

For the practice example . . .

TYPE: 7 (RETURN)

The new field will be placed at the end of the data base.

Enter New Field Information

The following prompt is at the top of the screen. Note that this is the same prompt you received when you created the first data base.

PRESS (CTRL-B) TO VIEW FIELDS
ENTER LENGTH OF FIELD 8 (1-239)

You must now indicate the length of the new field, which is field #8.

TYPE: 12 (RETURN)

When the prompt for the field name appears . . .

TYPE: PHONE # (RETURN)

The prompt, JUSTIFY FIELD (Y/N) will appear at the bottom of the screen. For this example . . .

TYPE: N (RETURN)

NOTE: The rules which govern field length, name, and justification during reconfigure are the same rules as were applied when constructing a new data base. See the Start A Data Base chapter, page 17, for details.

The Field Insertion screen should once again be on your screen. You can insert more fields if you wish. Remember that you can have up to 88 fields per data base.

When you have finished entering new fields and the insertion screen appears on the monitor . . .

TYPE: E (RETURN).

The following screen will appear:

SOURCE SORT LENGTH = 25
ENTER THE LENGTH OF THE LONGEST FIELD
YOU WILL SORT (10-239)
PRESS (RETURN) TO REVIEW FIELDS

REVIEW AND EDIT FIELD INFORMATION

If you wish to review the fields in the target file...

PRESS: (RETURN)

The following screen will appear:

FIELD #	LENGTH	NAME	
1	(25)	COMPANY NAME	
2	(30)	STREET	
3	(20)	CITY	
4	(2)	ST	
5	(5)	ZIP	
6	(9)	AMT DUE	(J)
7	(8)	DUE DAY	
8	(12)	PHONE #	
(0)	ALL CORRECT		
(1-8)	EDIT		
(9)	RESTART		
SELECT	(1-9)		

Note the options at the bottom of the screen. You can edit the information in any of the fields, including the original fields.

To change the field information, select the number of the field you wish to edit. You will be prompted to enter the field length, name and justification.

To erase all of the additional field entries, and return to the Field Insertion screen, choose the number corresponding to the RESTART option.

When all of the field information is correct . . .

TYPE: 0 (RETURN)

You will be returned to the Maximum Sort Field prompt.

As in the beginning of the program, you must enter the length of the maximum sort field. The length of the maximum sort field for the SOURCE FILE is stated at the top of the screen. In this case, the length will not change. (See page 21 for an explanation of the maximum sort field.)

TYPE: 25 (RETURN).

After the program processes the information, the following screen will appear:

TRANSFER RECORDS

TRANSFER RECORDS

SOURCE FILE CONTAINS 10 RECORDS
TARGET FILE CONTAINS 0 RECORDS
TARGET FILE WILL HOLD 696 MORE RECORDS
VOLUME 1 WILL HOLD 696 MORE RECORDS

1. AS ENTERED
2. AS SORTED
3. SURVIVOR LIST
4. RETURN TO MENU

SELECT (1-4)

If you return to the MENU SELECTION LIST at this time, the new data base will be created, but there will be no records in it. To transfer records from the source file into the target file, choose one of the first three options.

Option #1 allows you to transfer records by entering their physical record number.

Option #2 allows you to transfer records by entering their sorted record numbers. NOTE: If you wish to use the As Sorted option, the records must be sorted before entering this routine.

Option #3 allows you to transfer the records currently contained in the Survivor List.

Option #4 returns you to the MENU SELECTION LIST; no records will be transferred.

For the example . . .

CHOOSE: option #1 As entered. Press (RETURN).

Next, you must SELECT RECORDS.

The following prompt is displayed:

```
                SELECT RECORDS
                PRESS (RETURN) TO TERMINATE SELECTION
```

```
                1 ---->
```

Enter the numbers of the records you wish to transfer. You may enter single numbers or a range of numbers. For the example . . .

TYPE: 1-10 (RETURN)

If there are only ten more records allowed in the target file the ALL CORRECT (Y/N) prompt will appear immediately.

If there is room for more than ten records, the following line will appear:

```
                11 ---->
```

To indicate that you do not want to transfer any other records . . .

TYPE: (RETURN)

The following prompt will appear:

```
                ALL CORRECT (Y/N)
```

If you have made the correct record selection . . .

TYPE: Y (RETURN)

Otherwise . . .

TYPE: N (RETURN)

Processing will take place after you enter Y. The records will be transferred into the target file.

You will need to switch the target data disk and the Utility disk a few times during processing. Please wait until you are prompted before switching disks! The program will not proceed

until the correct disk is inserted; however, there must always be a disk in both drives. Label the disk, "Bills to be paid 1."

The last prompt regarding switching disks will inform you to insert the disk containing the target file (BILLS TO BE PAID 1) into drive #2. After you insert the new disk into the drive, the program will finish processing and return to the MENU SELECTION LIST.

The new file, BILLS TO BE PAID 1, now contains the first ten records from the source file, BILLS TO BE PAID. Each of the ten records in the new file also contains an additional field for a phone number.

You are now ready to work with the new file.

NOTE: If you need to work with the original source file, choose option #10 Select Files from the MENU SELECTION LIST. Choose option #2 Catalog Another Disk; insert the disk containing the original file and press (RETURN). Then, choose option #1 to indicate that you wish to work with the file contained on the original disk.

ENTERING DATA INTO THE NEW FIELD

Now that you have created an additional field(s), you will need to update the records on the new file (BILLS TO BE PAID 1). You will need to enter data into the new fields of the data base, e.g., phone #, field #8.

To do this, you need to . . .

CHOOSE: option #4 Update from the MENU SELECTION LIST. Press (RETURN).

The following instructions briefly tell you how to create and save a new format, which you will name PHONE NUMBERS. If you need a more detailed explanation, see the Update chapter, pages 74-81.

1) Choose to CREATE A NEW FORMAT *for updating*.

- 2) Select field #8 as the first (and only) field to update.
- 3) Choose to save the format.
- 4) Name the format PHONE NUMBERS.
- 5) Enter phone numbers, *with area codes*, and use the following format: ###-###-####. (NOTE: This format is only necessary for following the next example in the manual. If you are entering your own information, and have a phone number, you may enter the numbers in any way you wish.)
- 6) Return to the MENU SELECTION LIST.

CREATE A NEW FILE

NOTE: Please take the time to create the new file; it will be used with the Custom Output and Math example.

CREATE A NEW FILE allows you to create a new data base and then, transfer data from any of the fields of your source file into any field of your target file. You tell the program which fields are to be transferred.

NOTE: If you need to rearrange the field order of your current data base, you should use this routine.

CHOOSE: option #7 Reconfigure from the MENU SELECTION LIST. Press (RETURN).

CHOOSE: option #3 from the next menu to CREATE A NEW FILE. Press (RETURN).

When prompted, insert a blank disk into drive #1.

Label a disk DATA DISK – ACCOUNTS PAYABLE CHECKS and place it into drive #1.

To initialize that disk...

TYPE: I (RETURN)

Then, to confirm that you want initialization to take place...

TYPE: Y (RETURN)

The following prompt will appear:

ENTER FILE NAME

TYPE: ACCOUNTS PAYABLE CHECKS (RETURN)

You must now enter the length, name and justification of every field you want in the new data base. Do not worry if you make a mistake while entering the information. When all of the data has been entered, you will have the opportunity to make any necessary changes.

Enter the following information:

FLD #	LENGTH	NAME	JUSTIFY
1	25	COMPANY NAME	N
2	30	STREET	N
3	20	CITY	N
4	8	ST ZIP	N
5	3	AC <i>area code</i>	N
6	8	PHONE #	N
7	60	DESCRIPTION	N
8	10	AMT DUE	Y
9	8	DUE DAY	N
10	10	PAYMENT	Y
11	8	DEDUCT.	Y
12	10	\$ TO DATE	Y
13	10	BALANCE	Y
14	8	CK DATE	N
15	6	CK #	N

After you have entered the data for field #15, you will be prompted to enter the field length for field #16. Since you only want to enter 15 fields...

TYPE: 0 (RETURN)

A review page will appear allowing you to edit the information.

FIELD #	LENGTH	NAME
1	(25)	COMPANY NAME
2	(30)	STREET
3	(20)	CITY
4	(8)	ST ZIP
5	(3)	AC
6	(8)	PHONE #
7	(60)	DESCRIPTION
8	(10)	AMT DUE (J)
9	(8)	DUE DAY
10	(10)	PAYMENT (J)
11	(8)	DEDUCT. (J)
12	(10)	\$ TO DATE (J)
13	(10)	BALANCE (J)
14	(8)	CK DATE
15	(6)	CK #
(0)	ALL CORRECT	
(1-15)	EDIT	
(16)	RESTART	
SELECT	(1-16)	

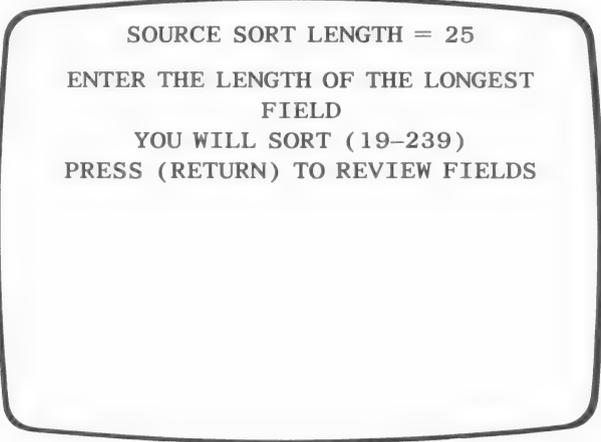
If you wish to edit one of the fields, enter the number of the field which needs editing.

If you need to add a field or re-enter all of the field information again, type the number which appears to the left of the word RESTART. You will be prompted to enter the field information.

When everything is correct . . .

Type 0 (RETURN)

The following screen will appear:



SOURCE SORT LENGTH = 25
ENTER THE LENGTH OF THE LONGEST
FIELD
YOU WILL SORT (19-239)
PRESS (RETURN) TO REVIEW FIELDS

Once again, you must enter the length of the longest field you will sort. (See the Start a Data Base Chapter, page 17, for details on the Maximum Sort Field.)

The following message will be displayed as the program processes the information:

* WRITING TARGET PRINTER VARIABLES *

After a few seconds, the following screen will appear:

```
*TRANSFER RECORDS*
SOURCE FILE CONTAINS 10 RECORDS
TARGET FILE CONTAINS 0 RECORDS
TARGET FILE WILL HOLD 696 MORE
RECORDS
VOLUME 1 WILL HOLD 382 MORE RECORDS
1. AS ENTERED
2. AS SORTED
3. SURVIVOR LIST
4. RETURN TO MENU
SELECT (1-4)
```

The first four lines of this screen contain information regarding record storage. Note that the target file will be stored on two disks if you exceed 382 records.

You will need to indicate which records you want transferred onto the target file. You may either refer to those records by their physical record number or by their sorted record number; option numbers 1 and 2 respectively. You may also transfer the records in the Survivor List by choosing option #3. (See page 118 & 120 for details on each of the options.)

For the example, you will be entering the physical record number; therefore, you should . . .

CHOOSE: option #1, As entered.

The following prompt will appear:

```
SELECT RECORDS
PRESS (RETURN) TO TERMINATE
SELECTION
1 ---->
```

TYPE: 1-10 (RETURN)

To terminate record selection...

TYPE: (RETURN)

ALL CORRECT (Y/N)

TYPE: Y (RETURN)

The program will...

* WRITE TARGET SURVIVOR LIST *

Then the following prompt will appear:

PLEASE INSERT
UTILITY DISK
INTO DRIVE 1
AND PRESS (RETURN)

Remove the Data disk and insert the Utility disk and...

PRESS: (RETURN)

The program will process the file information.

NOTE: The actual record data has not yet been transferred.

TRANSFERRING DATA

NOTE: If the target file has the same number of fields as the original file, you will be asked . . .

IS THIS A STRAIGHT TRANSFER

A straight transfer will move the data from each of the original fields directly into the corresponding Target fields. The program will simply match up field numbers and transfer the data from the original file into the corresponding field of the new file. That is, data from source field #1 will be transferred into target field #1, data from source field #2 will be transferred into target field #2, etc.

For the practice example, you cannot perform a Straight Transfer and the prompt will not appear.

You should plan which fields you will be transferring before entering the information into the computer.

For the practice example, you will be transferring the following fields of data:

SOURCE #	NAME	TARGET #	NAME
1	COMPANY NAME	1	COMPANY NAME
2	STREET	2	STREET
3	CITY	3	CITY
4	ST	4	ST ZIP
5	ZIP	4	ST ZIP
6	AMT DUE	8	AMT DUE
7	DUE DAY	9	DUE DAY
8	PHONE # (1st 3 digits)	5	AC (area code)
9	PHONE # (last 7 digits)	6	PHONE # (no area code)

The following screen should now be on the screen:

```
COMPANY NAME          COMPANY NAME
SOURCE                INTO TARGET

-----

TRANSFER    1          ----> F  1
(RETURN) ACCEPT (T)RANSFER (C)ONCAT
(S)PLIT (N)ULL (+)INC (-)DEC
(P)ROCESS
(R)ESTART (Q)UIT (?)HELP (U)P
(D)OWN (F)IELD (ESC)BACKUP
```

The object of this routine is to transfer the data contained in specified fields of the original data base into fields of the target data base. This process will create records in the target file. Many of the fields in this target file will be left blank, since there are more fields in the target file than in the source file. However, you can transfer certain data saving you from having to re-enter information which is common to both files.

Command Keys

The command keys at the bottom of the screen enable you to indicate the source field you wish to transfer into the specified target field. You may also indicate that you want data from two of the Source fields combined and placed into one of the Target fields. Conversely, you can split the data in one of the Source fields and transfer a part of the data into one of the Target fields.

The command keys function as follows:

(RETURN) accept the current transfer line.

(T) set the transfer line to read:

TRANSFER # ----> F#

This function simply transfers the data from the source field into target field. This is the default transfer type. You only need to type T if the line reads something other than TRANSFER and you want to change it back to the TRANSFER default.

Details of the (T)ransfer option are on page 204.

(C) concatenate, or append, one source field onto the end of another and then transfer the new appended fields into a target field. Choosing this option will change the transfer line to read:

```
CONCATENATE #/#          ----> F  #  
or  
CONCATENATE # #         ----> F  #
```

Details of the (C)oncatenate option are on page 206.

(S) split the source field, and transfer part of the original data into the target field. Choosing this option will change the transfer line to read:

```
SPLITFN #                ----> F  #  
or  
SPLITFI #                ----> F  #  
or  
SPLITBI #                ----> F  #  
or  
SPLITBN #                ----> F  #
```

Details of the (S)PLIT option are on page 207.

(N) transfer no data into the target field. Choosing this option will change the transfer line to read:

```
NULL                    ----> F  #
```

Details of the (N)ull option are on page 211.

(+) increment the source field number. You may also use a specific number to change the source field number. (E.g., You can enter 8 and the source field will change to 8 directly.)

Details of the increment option are on page 206.

(-) decrement the source field number. You may also use a specific number to change the source field designation.

Details of the decrement option are on page 206.

(P) process the target data file after all of the transfer information has been entered.

Details of the (P)rocess option are on page 213.

(R) restart the Reconfigure routine.

(Q) return to the MENU SELECTION LIST.

(?) access a set of help screens explaining the command keys.

(U) move the lines of transfer information up.

Details of the (U)p option are on page 212.

(D) move the lines of transfer information down.

Details of the (D)own option are on page 212.

(F) list field names and numbers for both files.

(ESC) back up to the beginning of the line being modified.

NOTE: You are always specifying what you want done to the **target field** on the current transfer line. The source field can be changed so that it corresponds to the specified target field. If you do not want anything transferred into the specified target field, you simply enter N for NULL.

The transfer line TRANSFER 1 ----> F 1 presently on the screen, indicates that the program will transfer the contents in field 1 of the source file into field 1 of the target file.

NOTE: The top line on the screen tells you the name of the source and target field referred to in the current transfer line.

Setting transfers

For this example, you need to transfer source field 1 into target field 1. To accept the transfer line as it appears on the screen . . .

TYPE: (RETURN)

The first line will scroll up and a second line will appear allowing you to indicate what you wish to do with target field 2. The second line presently reads:

```
TRANSFER 2                                ----> F  2
```

Note that the field names at the top of the screen have changed. They now both read: STREET.

Once again, this is the desired transfer. Accept the transfer . . .

TYPE: (RETURN)

The following line now appears on the screen:

```
TRANSFER 3                                ----> F  3
```

You also want to transfer field 3 into field 3 of the target field . . .

TYPE (RETURN)

Your screen should now look like this:

```
ST                               ST ZIP
SOURCE                           INTO TARGET
TRANSFER 1                        ----> F 1
TRANSFER 2                        ----> F 2
TRANSFER 3                        ----> F 3
TRANSFER 4                        ----> F 4

(RETURN)ACCEPT (T)RANSFER (C)ONCAT
(S)PLIT (N)ULL (+)INC (-)DEC
(P)ROCESS
(R)ESTART (Q)UIT (?)HELP (U)P
(D)OWN (F)IELDS (ESC)BACKUP
```

At this time, the current transfer line is set to transfer data from source field 4 (STate) into target field 4 (STate ZIP). Although it is true that there is data to be transferred into field 4, only part of that data is contained in source field 4.

You must use the CONCATENATE option to combine source field 4 and 5 and move the data into target field 4.

Note that the target file has the state and zip code in the same field. This was done for purposes of illustrating how you can combine the contents of any two fields of your source file into one field of your target file.

Concatenate

To indicate that you wish to concatenate (combine) two of the Source fields . . .

TYPE: C

The transfer line now reads:

```
CONCATENATE 4/ 5      ---->F 4
```

There is a prompt directly above the command key options:

```
PUT A SPACE BETWEEN FIELDS (Y/N)
```

If you want a space between the data of the two Source fields, answer yes.

In the case of the state and zip code, a space is needed. So, you should . . .

TYPE: Y

The cursor is now blinking over the first field number of the concatenation.

You may change this number by pressing the + or - key; or you may enter another field number.

Try using these keys now, but return to the 4.

When the first number of the concatenate line is 4, accept this number . . .

TYPE: (RETURN)

The 4 will be accepted.

After you have accepted the 4, the cursor will move to the 5.

Using the + and - keys or entering another field number, you can change this field number as well.

Leave it as 5 for the example, and accept the number . . .

TYPE: (RETURN)

The next transfer line appears:

TRANSFER 6 ----> F 5

Split

The next field transfer will be used to demonstrate the field **splitting** option. This option allows you to transfer a portion of a field. You must want the field information split in the same place for every record. You will be prompted to indicate where you want the split to occur and which part of the field you want transferred.

The current transfer line presently reads:

TRANSFER 6 ----> F 5

Since in this example, the source field is not correct for transfer, you must change it before proceeding with the split function. You must change source field #6 (AMT DUE) to field #8 (PHONE #).

TYPE: + +

The line should now read:

TRANSFER 8 ----> F 5

For the example, you will split the phone number into two fields, area code and phone number. Although this is not a common split, it is possible that you may want to make this split to enable a sort by area code.

To indicate that you want the source field to be split before data transfer . . .

TYPE: S

The following four options will appear at the bottom of the screen:

1. SPLIT FRONT AT POSITION
2. SPLIT FRONT AT CHARACTER
3. SPLIT BACK AT POSITION
4. SPLIT BACK AT CHARACTER

The first target field to be used is the area code, AC. Since this field corresponds to the beginning, or FRONT, of the source field, you know that you will use one of the first two options.

Note that the standard form of the source field PHONE # is ###-###-####. The character “-” separates the area code from the rest of the phone number.

Furthermore, the area code is always comprised of the first three characters of the phone number field.

You may either indicate that you want the field split at the third position or at the character “-”; the result will be the same.

Indicate that you will designate a position, rather than a specific character, for the split . . .

CHOOSE: option #1 Split front at position.

The next prompt to appear will ask whether the split should be **inclusive or non-inclusive**:

SPLIT INCLUSIVE OR NONINCLUSIVE (I/N)

Choosing inclusive means that you wish the character in the designated split position to appear in the target field. Choosing non-inclusive means that you want everything up to, but not including, the designated character to appear.

Later in the routine you will indicate which position (or character) you want to use. Decide on that information now and then decide whether you want the split to be inclusive or non-inclusive.

For the example, you will be designating the third position for the split, so choose inclusive. (NOTE: If you were going to use the fourth position, non-inclusive would be the correct choice.)

To indicate inclusive . . .

TYPE: I

The transfer line has now reappeared and reads:

```
SPLITFI 8 AT POS 1 ---->F 5
```

The cursor should be blinking over the source field number. This field number should be 8. If it is . . .

TYPE: (RETURN)

Otherwise, use the + or - key to change the field number and then press (RETURN).

Note the prompt at the bottom of the screen:

```
SELECT SPLIT POSITION (1-12)
```

This is your opportunity to specify the desired position for the split.

Type: 3 (RETURN)

The transfer lines appearing on your screen should now read:

```
TRANSFER 3          ----> F 3
CONCATENATE 4 5     ----> F 4
SPLITFI 8 AT POS 3  ----> F 5
TRANSFER 1          ----> F 6
```

You must now indicate what transfer you wish to take place in target field 6. Once again you need to split the source field PHONE #. This time you will transfer the second part of the field.

Indicate that you want a split . . .

TYPE: S

Since you want to transfer the second part of the field, you should choose one of the SPLIT BACK options. For this example use the SPLIT BACK AT CHARACTER option . . .

TYPE: 4

The character which will be designated is the hyphen (-); when there is more than one occurrence of the designated character, the **first** occurrence will be assumed.

Since you do not want the first hyphen to appear in the target field, you should choose the **NON-INCLUSIVE** option.

TYPE: N

The transfer line should now read:

```
SPLITBN 1 AT CHR ' ' ----> F 6
```

To change the field number to 8...

TYPE: 8 (RETURN)

The following prompt will appear at the bottom of the screen:

ENTER CHARACTER TO SPLIT AT

Enter - as the splitting character...

TYPE: - (RETURN)

Your screen should now look like this:

STREET SOURCE	DESCRIPTION INTO TARGET
CONCATENATE 4 5	----> F 4
SPLITFI 8 AT POS 3	----> F 5
SPLITBN 8 AT CHR ' - '	----> F 6
TRANSFER 2	----> F 7

(RETURN)ACCEPT (T)RANSFER (C)ONCAT
(S)PLIT (N)ULL (+)INC (-)DEC (P)ROCESS
(R)ESTART (Q)UIT (?)HELP (U)P
(D)OWN (F)IELD (ESC)BACKUP

TYPE: N (RETURN)

Repeat this entry five more times to finish this part of the routine.

Editing the transfer information

The message READY TO PROCESS will appear across the top of the screen. This means that you may process if you want. However, you may go back and edit the information before processing.

Even though the desired transfers are now entered, take this opportunity to practice editing. Before processing, everything will be returned to its correct format.

PRESS: D

Notice that the transfer lines, rather than the cursor, are moved down.

PRESS: U

You are back to the last line.

PRESS: D

Continue pressing D until the cursor is positioned at the concatenate line.

PRESS: T

The concatenate line will change to a simple transfer line. The cursor will be positioned over the 4.

PRESS: (ESC)

The cursor moves to the beginning of the line.

PRESS ESC again and nothing happens.

PRESS: C

The line returns to concatenation.

TYPE: Y to enter a space between the field information.

The concatenate line should read:

CONCATENATE 4 5 ---> F 4

To accept both field numbers . . .

PRESS: (RETURN) (RETURN)

You can now edit the next line.

As soon as you have made the necessary changes, you are ready to process.

REMINDER: You may use R to erase all of the transfer information and begin again. You may also use Q to quit and return to the MENU SELECTION LIST.

Processing

When everything is ready to process . . .

TYPE: P

As in the Straight Transfer routine, you will be prompted to swap disks as Reconfigure is processed; follow these prompts closely.

When you are returned to the MENU SELECTION LIST, you are able to use the new data file.

APPEND

The last option in the Reconfigure routine, Append, allows you to transfer data from one file into another file which already has some records in it.

For example, you may already have created the ACCOUNTS PAYABLE CHECKS file and entered some records; you may also have added additional records to the BILLS TO BE PAID 1 data base. You then decide you want to transfer the new records of the BILLS TO BE PAID 1 file to the ACCOUNTS PAYABLE CHECKS.

You do not want to create a new data base because you will lose the records already in the ACCOUNTS PAYABLE CHECKS file. You need to Append to the end of the ACCOUNTS PAYABLE CHECKS file; thus saving the original records and adding new ones by transferring data from another file.

The method of transfer for the APPEND option is exactly the same as that for the CREATE A NEW FILE option.

After choosing the APPEND option you will be prompted to insert the TARGET DISK into drive 1.

The target disk contains the file to which you will add records.

First, you indicate which records you wish to have transferred.

Then, you match fields and indicate which fields you wish transferred.

The program will transfer the desired information. The target file will contain the additional records as well as its original ones.

See the Create a New File for transfer instructions.

NOTE TO USERS WITH LARGE DATA BASE FILES

During the Reconfigure routine, the program must *temporarily* write some information to the disk. If there is not enough room on the disk to store this information, you will receive the following prompt.

THERE IS NO SPACE ON THE DATA DISK
WHERE THE RECONFIGURE TEMPORARY FILE
CAN BE STORED

INSERT A BLANK DISK INTO DRIVE 2
PRESS (I) TO INITIALIZE
PRESS (RETURN) TO RETURN TO MENU

If this prompt appears, simply insert a blank disk into drive 2 and . . .

TYPE: I (RETURN)

When asked to confirm that you want to initialize the disk . . .

TYPE: Y (RETURN)

The program will prompt you when to place the data disk back into the drive.

After the Reconfigure routine is complete, you will not need the disk containing the temporary file information.

QUITTING RECONFIGURE

When you quit one of the Reconfigure routines before the routine is complete, the program still “thinks” that you are working with the target file, even though it is incomplete. The name of the target file will appear at the top of the MENU SELECTION LIST.

To work with the original file, you *MUST* do the following:

- 1) Make certain that the original Data disk is in drive #2.
- 2) Choose option #10 Select Files from the MENU SELECTION LIST and then choose option #1 to use the file on the disk.

ENTER NEW FIELD INFORMATION

IMPORTANT—If you intend to use the example in the manual to learn the Math and Index routines, and especially the Output Editor routine for Custom Output, use option #4 Update from the MENU SELECTION LIST and enter data into the following new fields.

Field #7 DESCRIPTION needs at least 31 characters to demonstrate the Output Editor’s capability of printing a specific portion of a field.

Field #10 PAYMENT needs a numeric amount no greater than the amount in field #8 Amt Due.

Field #11 DEDUCT. needs a decimal percentage, i.e., .05 rather than 5%.

Leave the last four fields, \$ TO DATE, BALANCE, CK DATE, and CK #, blank. During the Math and Custom Output examples, you will have the program automatically calculate and enter the data for these fields.

ENTER: information into the remaining records.

For the practice example, continue working with the ACCOUNTS PAYABLE CHECKS file.

SUMMARY

Reconfigure allows you to do four things:

- 1) Rewrite the data file removing deleted records from the disk.
- 2) Perform a straight transfer of data from one data base onto another Data disk, creating a new file. You may add fields to the new data file; no data will be transferred into the additional fields.
- 3) Create a new file transferring some or all of the data from the fields of the original file into any of the fields of the new file.
- 4) Append records from one data base onto another data base, transferring specified data.

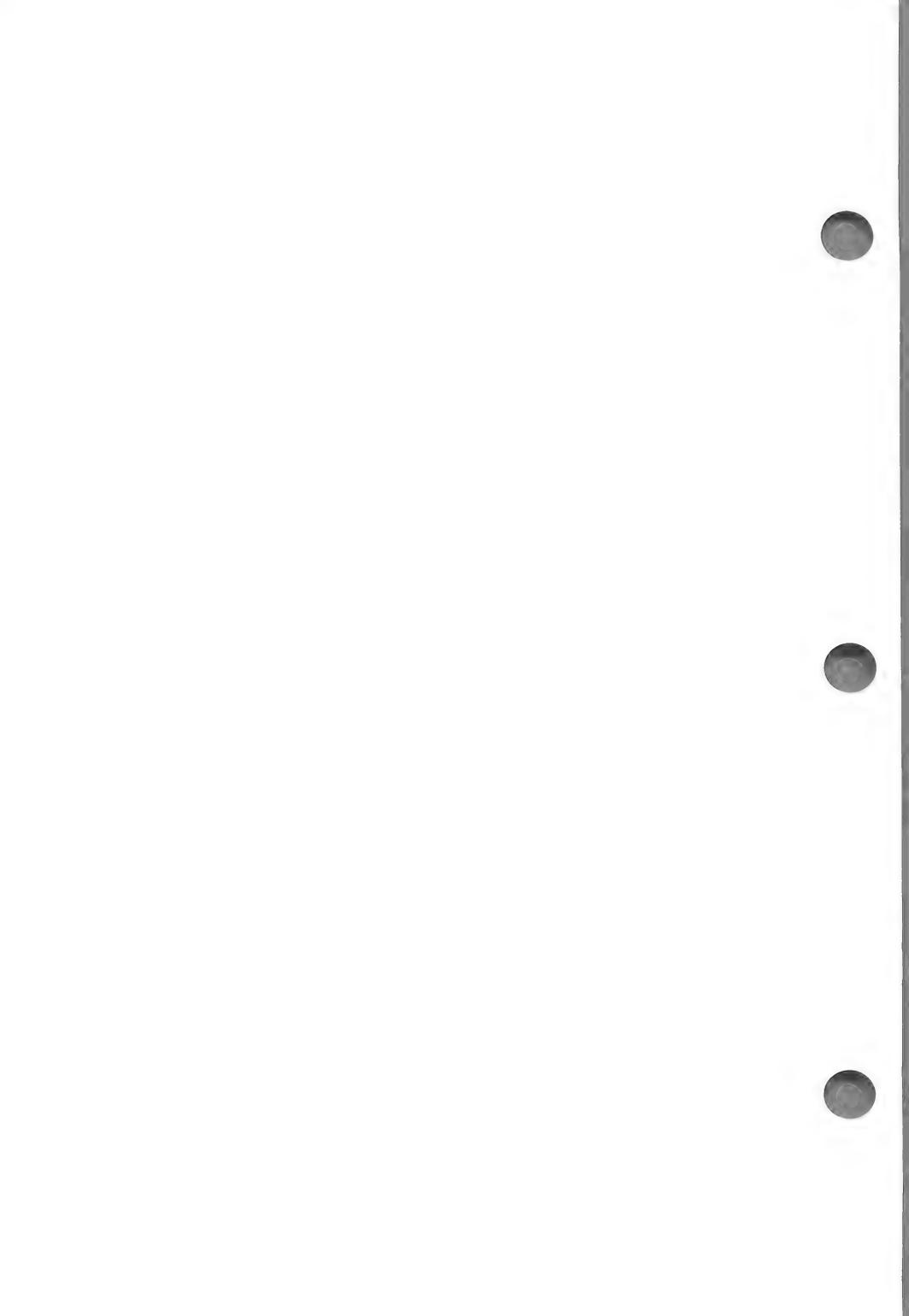
If you are creating a new file or appending to an already existing data base, you have a great deal of control over the data you transfer. You can combine two fields and place the combined data into one field of the new file. You can also split data contained in the field of the original data base and place the shortened entry into a field of the new file.

SUMMARY OF COMMANDS

RECONFIGURE

Create a new file

(RETURN)	ACCEPT	Accept current transfer line
T	TRANSFER	Set current line to TRANSFER
C	CONCATENATE	Combine (or concatenate) two Source fields
S	SPLIT	Split Source field
	I INCLUSIVE	Include split character when transferring
	N NON-INCLUSIVE	Do not include split character when transferring
N	NULL	Transfer NOTHING into the Target field
+	INCREMENT	Increment (increase by 1) the Source field number
-	DECREMENT	Decrement (decrease by 1) the Source field number
P	PROCESS	After all of the transfer lines have been entered, process Reconfigure
R	RESTART	Clear transfer information, begin again
Q	QUIT	Return to MENU SELECTION LIST
?	HELP	View help screen
U	UP	Move transfer lines up
D	DOWN	Move transfer lines down
F	FIELDS	View field information for source and target file
ESC	BACKUP	Go to beginning of the current transfer line



MATH

The Math routine has two functions:

- 1) It calculates a total and average for a specified field of your data base.
- 2) It allows you to permanently, or tentatively, perform an arithmetical operation between fields. The calculation must involve the field to be totaled and averaged. For example, if you are totaling the AMT DUE field, you can add, subtract, multiply or divide the AMT DUE field by any another field.

The calculation is performed on each record individually. If you wish to save the result of the calculation, you may place the result into *any* field of the data base.

NOTE: After the arithmetic operation has been performed, the program will automatically calculate the total and average for all of the selected records. This result will not be saved, but you can make a printout of the information if you want.

You may choose to process selected records, and then further limit the records by indicating that you only want to process the selected records which fall between certain dates. For example, you may select to process records 1-10, and then indicate that you only want to use those selected records which have a date between 01/01/83 and 07/01/83.

Math example

For the practice example, you will run the Math routine in order to obtain the value of field 13 (BALANCE). This value is obtained by subtracting field #11 (PAYMENT) from field #8 (AMT DUE). The total of all of the AMT DUE fields will be calculated automatically.

In general, the steps used in the example are as follows:

- 1) Choose the AMOUNT DUE field as the one to be **TOTALED**.
- 2) **SUBTRACT** the AMOUNT DUE field from the **PAYMENT** field.
- 3) **STORE** the result in the **BALANCE** field.

- 4) Choose the following DATE RANGE, 01/01/83 – 05/31/83.
- 5) PROCESS the data base.

MATH PROCEDURE

CHOOSE: option #16 Math from the MENU SELECTION LIST. Press (RETURN)

The RECORD SELECTION MENU will appear. See the Inspect/Change chapter for an explanation of the options.

CHOOSE: option #1 Selected records.

The next screen is prompting you to enter the records with which you wish to work:

```

      * MATH *
    SELECT RECORDS (1-10)
  PRESS (RETURN) TO TERMINATE SELECTION
      1    ---->

```

TYPE: 1-10 (RETURN)

NOTE: If you have fewer than ten records in the data base, type the appropriate range.

If you have more than ten records in your data base you must signal the end of selection...

TYPE: (RETURN)

The prompt ALL CORRECT (Y/N) will appear on the screen.

When the entries are correct...

TYPE: Y (RETURN)

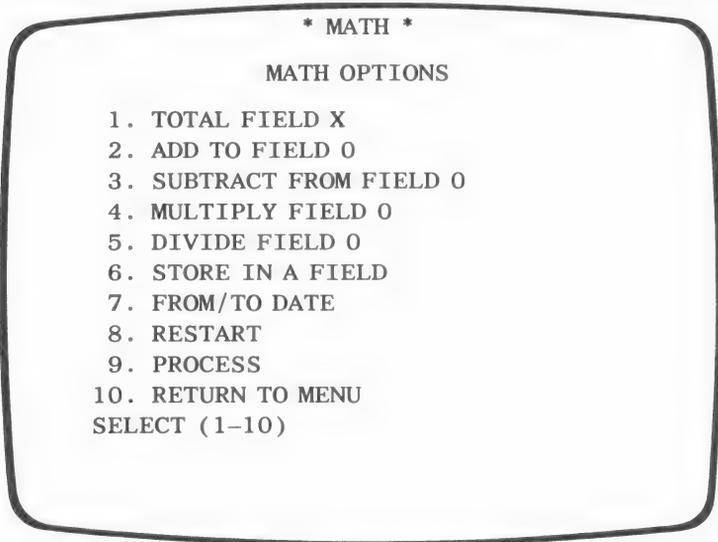
The next prompt is asking if you wish to have the report printed:

DO YOU WANT OUTPUT TO PRINTER (Y/N)

Answer this prompt appropriately and then press (RETURN).

Math Options

The following MATH OPTIONS MENU should be on the screen:



Use this menu to indicate which field you want totaled and which fields will be involved in the preliminary calculation; if you want one performed. You may only choose one of the four arithmetical options. If you need more than one operation performed, you must use the Math routine again.

Option #1 allows you to indicate which field you wish totaled.

Options #2-5 allow you to indicate which field you wish to use in the preliminary calculation.

Option #6 allows you store the result of the preliminary calculations in any field of the data base.

Option #7 allows you to set a date range.

Option #8 returns you to the RECORD SELECTION MENU. If you have performed an entry search, the program gives you the option of entering a new search item or returning to the RECORD SELECTION MENU.

Option #9 processes the calculations and should be used after you have entered all of the options you wish to have performed.

Entering total option

The first step indicates which field you wish to have totaled. Remember that any calculation you perform will involve this field.

CHOOSE: option #1. Press (RETURN)

The following prompt is asking which field you wish to total:



PRESS (F) TO VIEW WHICH FIELDS
TOTAL WHICH FIELD (1-15)

Enter the number of the AMOUNT DUE field . . .

TYPE: 8 (RETURN)

Note that if you do not remember the number of the field you want to total you can type F (RETURN) to view a list of the fields.

After entering the field number the MATH OPTIONS MENU will reappear.

At the top left hand corner of the screen the following line appears:

TOTAL FIELD 8

Each entry you make will appear at the top of the screen for easy reference.

You could process the records now, obtaining a total for the AMT DUE field, or you could perform some preliminary calculations. In the example, you will enter a preliminary calculation.

Entering a calculation

Remember that in this example, you need to subtract field #10 from field #8.

To perform this calculation . . .

CHOOSE: option #3 Subtract From Field 8 indicating that you want to subtract *some* field from field #8. Press (RETURN)

The following prompt should be on the screen now:

PRESS (F) TO VIEW FIELDS
SUBTRACT WHICH FIELD (1-15)

Now you should enter the desired field number:

TYPE: 10 (RETURN)

Note that this calculation (fld 8 - fld 10) will be performed on each record individually.

The MATH OPTIONS MENU will re-appear.

The following calculation should now appear at the top left hand corner of the screen, under the line which reads TOTAL FIELD 8:

SUBTRACT FIELD 10

Store result

Using option #6 Store in a Field you may store the result of the preliminary calculation in any field of your data base.

If you do not choose to store the result, the calculation will be performed and the results used only for obtaining the total and average. The actual record data, however, will not be altered.

CAUTION: Storing the result in a field which already contains data, erases the previous contents.

For the example, store the result of the calculation in field #13 BALANCE by doing the following:

CHOOSE: option #6 Store in a Field, from the MATH OPTIONS MENU. Press (RETURN).

TYPE: 13 (RETURN)

Note that the following three lines now appear at the top of the screen:

TOTAL FIELD 8
SUBTRACT FIELD 10
STORE TOTAL IN FIELD 13

NOTE: Any calculations will take place *before* the field is totaled.

Date range

Before processing the records, you may choose option #7 From/to Date to select a date range. Remember that this range limits the number of selected records which will be involved in the processing.

CHOOSE: option #7 From/to Date from the MATH OPTIONS MENU. Press (RETURN)

The following line will appear, allowing you to enter the first date of the range:

FROM 00/00/00

TYPE: 01/01/83

The next prompt allows you to enter the last date of the range:

TO 00/00/00

TYPE: 05/31/84

The following prompt will appear, asking you to enter the date field:

PRESS (F) TO VIEW FIELDS
SELECT DATE FIELD (1-15)

Select field #9 as the date field:

TYPE: 9 (RETURN)

There is now an additional line in the left corner of the screen. This line should read:

FROM 01/01/83 TO 05/31/84 IN FIELD 9

Process

Your MATH OPTIONS menu screen should now look like this:

```
          * MATH *  
TOTAL FIELD 8  
SUBTRACT FIELD 10  
STORE TOTAL IN FIELD 13  
FROM 01/01/83 TO 05/31/84 IN FIELD 9  
          MATH OPTIONS  
1. TOTAL FIELD X  
2. ADD TO FIELD 8  
3. SUBTRACT FROM FIELD 8  
4. MULTIPLY FIELD 8  
5. DIVIDE FIELD 8  
6. STORE IN A FIELD  
7. FROM/TO DATE  
8. RESTART  
9. PROCESS  
10. RETURN TO MENU  
SELECT (1-10)
```

If any of the four top lines indicate the wrong operation, choose the corresponding operation and enter the correct information.

For example, if you had entered the wrong field number for the subtraction operation, you would choose option #3 SUBTRACT FROM FIELD 8. You would then enter the correct field number.

If you do not wish to subtract, but rather you wish to add to field 8, you would choose option #2 ADD TO FIELD 8. The addition operation would replace the subtraction.

Use option #8 to erase all of the operations and begin again.

When you are ready to process the results . . .

CHOOSE: option #9 (RETURN)

The program will display a message showing the processing operation.

When the processing is complete, the total, average, and count will appear below the four lines indicating the chosen operations.

If you had chosen to print the report, this information will be printed.

The total is the sum of the results of the calculations performed in field #8. NOTE: If no preliminary calculations are performed, the total is simply the sum of the entries in the specified field.

The average indicates the average of field #8.

The count indicates how many records were actually used while processing.

After you are finished reviewing the information . . .

PRESS: (RETURN)

You will be returned to the RECORD SELECTION MENU, or if you originally performed an Entry Search, you will be given the opportunity to choose another search item or return to the RECORD SELECTION MENU.

From the RECORD SELECTION MENU you may use the Math routine again, by choosing options #1-3, or you may return to the MENU SELECTION LIST, by choosing option #4.

For the example, choose to return to the menu.

The result of the preliminary calculation (field 8 – field 10) is now stored in field #13 of each of the specified records. You may enter the Inspect/Change routine to view the results.

SUMMARY

The Math routine calculates a total and average for a specified field and allows you to perform a preliminary calculation on the field being totaled.

You may store the result of the calculation in any field of your data base. Or, you may perform a calculation for use only while the totals are being calculated. In the latter case, the result of the calculation will not alter the actual information in the records.

In general, the procedure for the Math routine is as follows:

- 1) Choose a field which you wish to be totaled.
- 2) Choose the type of calculation you wish to perform on this field and indicate the other field you wish to use with the calculation. (optional)
- 3) Store the result of the calculation in a field. (optional)
- 4) Choose a date range. (optional)
- 5) Process the data base.



INDEX

The Index routine generates a list of data contained in a specified field of your data base.

The index you create can be used in the same way an index to a book is used, enabling you to locate specific information quickly and easily.

These indices can be kept with the printouts to help access specific records. For example, if you want to look up information for a specific business, you can use the index, which lists the occurrence of every different field entry in all of the records, and index the COMPANY NAME field.

The program can generate three types of indices:

- 1) An index listing each different entry and the number of the *first* record in which it occurs.
- 2) An index listing each different entry and the number of *every* record in which it occurs.
- 3) An index listing each different entry and *the number of times* the entry occurs.

HINT: Use the Index routine if the Sort or Search routine seems to be functioning incorrectly. Choose to print the index which displays all occurrences on the field you have used for the sort or search.

Check the index listing for seeming duplication. Often, if you have entered a space at the end of an entry, you cannot see this difference on a printout, but the program makes a distinction and your records will appear not to be sorted correctly. Furthermore, an entry with an extra space, or one which has been misspelled, will not appear when you search for the correctly spelled entry.

After you have run the index, enter the Inspect/Change routine and edit the records which contain the entry which has been entered incorrectly.

INDEX PROCEDURE

Before entering the Index routine, you will probably want to sort the records on the field you will use for the index. This will ensure that the index appears in alphabetical or numerical order.

For the example, do a normal sort on the COMPANY NAME field. This will be a "word sort" in "ascending order." (See the Sort chapter, pages 135-138, for details.)

After the sort is complete . . .

CHOOSE: option #15 INDEX from the MENU SELECTION LIST. Press (RETURN).

If the Utility disk is not in drive #1, the following prompt will appear:



PLEASE INSERT
REPORT DISK
INTO DRIVE 1
AND PRESS (RETURN)

Place the Report disk into drive #1 and . . .

PRESS: (RETURN)

The following menu will appear:

INDEX RECORDS

1. AS ENTERED
 2. AS SORTED
 3. SURVIVOR LIST
 4. RETURN TO MENU
- SELECT (1-4)

To have the records appear in the order you have sorted them, use As Sorted option #2.

If you had not run a sort, or if you did not want the index in sorted order, you would use As Entered, option #1.

You can create an index of the records in the Survivor List by using SURVIVOR LIST (option #3). (See the List/Report and Master Search chapters for instructions on creating a Survivor List.)

If you have used the Sort routine with the example . . .

CHOOSE: option #2 As Sorted from the above menu.

After the message * READING INDEX FILE * is displayed, the following menu will appear.

* INDEX FIELD *

INDEX 1 OF 10 ALLOWED

ENTER <0> IF FINISHED

* LIST OCCURRENCES *

1- FIRST

2- ALL

3- NUMBER OF

NOTE: You may create up to ten indices before displaying or printing the index report.

Option #1 will give a listing of each different entry in the specified field, followed by the number of the *first* record in which the entry occurred. The following example illustrates the listing:

<u>FIELD DATA</u>	<u>FIRST RECORD ENTRY OCCURRED</u>
SEARS	3
VISA	1
TOYS ETC.	6

Option #2 lists each different entry followed by a list of *every* record in which the entry occurred. The following example illustrates the listing for option #2:

<u>FIELD DATA</u>	<u>ALL RECORDS ENTRY OCCURRED</u>
SEARS	3, 5, 8
VISA	1, 2, 4
TOYS ETC	6, 7

Option #3 lists each different entry followed by the *number of times* the entry occurs in the data base. The following example illustrates this option:

FIELD DATA	NUMBER OF OCCURRENCES
SEARS	3
VISA	3
TOYS ETC	2

For the practice example . . .

CHOOSE: option #2 ALL from the LIST OCCURRENCES MENU. Press (RETURN)

A list of the fields and their corresponding numbers will appear. This list will be followed by the prompt:

INDEX WHICH FIELD #: ?

Choose the field you wish to index.

For the example, you will index field #1.

TYPE: 1 (RETURN)

The LIST OCCURRENCES MENU will appear allowing you to create a second index.

You may index the same field with each of the menu options or you may use different fields.

If you want to see the actual results of the other options, choose option #1 and a field number. Then choose option #3 and a field number.

When the LIST OCCURRENCES MENU is displayed and you have entered the information for all of the indices you wish to generate . . .

TYPE: 0 (RETURN)

The following prompt will appear on the screen:

DO YOU WANT OUTPUT TO PRINTER (Y/N)

Answer Y, for yes, if you have a printer and you want to make a hard copy of your index. Otherwise, answer N, for no.

**LOADING DATA
PRESS (CTRL-Q) TO ABORT**

IMPORTANT: If you are outputting to the screen, be prepared to press CTRL-S as soon as the data begins to appear; this will keep the screen from scrolling. Press CTRL-S again to view the remaining fields.

If you have chosen to generate more than one index, when the first index has been displayed, you will need to . . .

TYPE: N

The next index will be displayed.

When all of the indices have been displayed, the following prompt will appear at the bottom of the screen:

PRESS (A) FOR ANOTHER COPY
PRESS (RETURN) TO RETURN TO MENU

You may make another copy of the index by pressing A. If you have not opted for a printout, pressing A will display the indices a second time.

Press (RETURN) to return to the MENU SELECTION LIST.

SUMMARY

To have the index appear in alphabetical or numeric order, sort your records on the field you wish to index. (See the Sort chapter)

The index routine can create three types of listings:

- 1) a listing of each different entry and the first record in which it occurs
- 2) a listing of each different entry and every record in which it occurs

3) a listing of each different entry and the number of records in which it occurs.

After indicating the field to index and the type of index you desire, the program produces the listing automatically.



OUTPUT EDITOR

The Output Editor routine provides you with great control over your data base. You can design a highly specialized output format used for running reports; filling out forms; designing your own forms; and more. Perform complex mathematical operations on data and then print the results and/or place the results into any field of the data base.

There are 2 routines involved in the Output Editor:

1. **Output Editor**, used to create, edit, and print the custom output formats.
2. **Custom Output Processor**, in List/Report, uses the format created in the Output Editor to process data and print the desired report.

A format consists of 2 major parts:

1. **Print Positions:** The information contained within a print position tells the Custom Output Processor *where* to print and *how* to print (formatted numerics, character fields, or constants). As will be explained in more detail later, these print positions also specify *when* to print.
2. **Assignment & Math:** The commands specified in Assignment & Math instruct the Custom Output Processor *what* to print in the print positions. These commands can also specify how to manipulate the data before printing, as well as perform math and keep totals.

There are 7 basic steps to follow when creating any Output Editor format:

1. **File Information:** Print the file information, using option #11 File Info on the MENU SELECTION LIST.
2. **Design Layout:** Design a layout for your report on paper. For best results, use **print chart paper** so that you may plan to the exact line and column, where and what fields you want printed. If you are using preprinted forms, they may have the form already available on print chart paper. You could also have a transparency made to lay over the preprinted form. The use of print chart paper eliminates the trial and error method which could take a great deal of time getting the printed report

to look the way you want. Print chart paper is available at computer and office supply stores and in catalogs. Print chart paper is not essential to use Custom Output, graph paper could be used, or lined paper. The object is to be able to plan and know where you want everything printed so you can type it into the Output Editor.

3. **Print Locations:** Enter the coordinates, line and column number, indicating *where* each piece of information should be placed on the printout. This is where print chart paper comes in handy. Each entry line is called a **print position**.

Print Locations are divided into five groups which correspond to *when* they are to be printed. These five groups are **Top of form, Record, Subtotals, Totals, and Bottom of page**. Before they can be printed, their corresponding **Assignment & Math** instructions are executed to fill in the print positions.

Use the file information printout to write print positions beside fields as you go. After print positions are entered the program has only been told *where* to print information. It does not yet know *what* to print.

4. **Print Format:** Print the format information which identifies print position numbers and write down the fields next to the print positions.
5. **Assignment & Math:** Write the directions that will manipulate your data, and then move the data from fields into the print positions for printing. Telling the program *what* to print and calculations you want performed on the data base is done in **Assignment & Math**. At this time, you must communicate to the computer exactly what you want done using any of the commands provided by the Output Editor routine. If the commands are in proper order, you will get the desired result. Because logic is so important here, you should write out the series of commands before entering them into the computer. (See end of chapter for complete list of commands.)

The Assignment & Math commands have five major sources of information to be used in filling in the print positions:

Data fields. These are the fields of the current data base record. A format may consist of MOVE commands from fields to

print positions on a page. Or it may consist of complex calculations and manipulations of data before being printed on a page and/or written back to the data base.

User fields. These can be used for a report to contain information that is not in the data base records. There are 10 user fields. In the Output Editor, you specify a question to be asked of the person using List/Report. The Custom Output Processor uses the answers given by the operator as the contents of the user fields. They may also be used in Assignment & Math to hold alphanumeric data.

Stack-registers. This is the place mathematical formulas are resolved. There are four stack-registers, but data can be written to and read from only 1, called the X stack-register. The other 3 stack-registers, Y, Z, and T, are used to contain intermediate math results.

Storage-registers. This is where numerical **results** may be saved and retrieved for subtotals, totals, and other calculations. There are 201 storage-registers.

Print Positions. The primary function of the print positions is to receive the data to be printed, they *can* be used for other purposes. They can be used to format numbers or edit character data to be used before printing. It is also optional whether a print position finally gets printed. This option is for advanced editing or for turning off print positions that are no longer needed.

6. **Save Format:** Save the format on the format disk for future use.
7. **Print Report:** Return to the MENU SELECTION LIST To process and print your reports using Micro Lab's Custom Output option in the List/Report routine.

Because the Output Editor allows you great control over the data base, it requires that you design the exact layout and/or calculations you want before beginning work. Then give the computer step by step instructions, indicating the field with which you are working and what you wish done with it. You may, for example, move a field to a specified location on the layout; or you may perform mathematical operations on a field value and then move the result.

Output Editor provides you with a "language" consisting of simple commands the program can interpret. After you plan exactly what you want done, you should not have difficulty learning how to communicate your needs to the computer.

There are also Assignment & Math commands that contain or specify information. Commands such as **PAGE#**, which specifies the current page number of the report. Or **PI**, which supplies 3.14159... for mathematical calculations.

This is the basic structure of the Custom Output Processor. As you will see in the following examples, you do not need to use all the facilities at once. The prime factor in how much needs to be done within the Output Editor, solely depends upon your needs.

IMPORTANT - The ACCOUNTS PAYABLE CHECKS data base example created in the Reconfigure chapter page 196 is used to illustrate all six examples in this chapter.

You will be shown how to plan your output format, and then how to translate those plans into commands the computer can interpret.

Example 1 describes Printer Information and shows how to create a simple format to print mailing labels.

Example 2 describes all 5 print locations that can be used on a page to create a simple format to print an Accounts Payable report.

Examples 3 and 4 expand on example 2 and illustrate how to edit the format. Data in the data base is manipulated and more detailed reports are printed.

Example 5 creates a format to illustrate how to print on preprinted checks. Using the Output Editor, a format can be created to fit any preprinted form.

Example 6 expands on example 5 where calculations are performed on your data base. A report is not printed in this example.

EXAMPLE 1 ,

The object of this example is to produce a format for printing mailing labels. In this example, you will be shown how to:

- Plan a simple forms layout. In this case, a format for blank mailing labels.
- Enter printer information. This is where you specify the characteristics of your printer/form (width, height, control characters) and your interface (printer or clock) slot(s).
- Enter Print Position descriptions to the Output Editor.
- Enter Assignment & Math commands. The primary commands used will be **MOVE** and **APPEND**.

As stated in the introduction, before you begin using the Output Editor routine, you should make a listing of the file information.

CHOOSE: option #11 File Info from the MENU SELECTION LIST. Press (RETURN).

If you have a printer, choose to print the information. Otherwise, display the information to the screen and copy the field information onto a piece of paper.

Decide which fields of the ACCOUNTS PAYABLE CHECKS data base need to be printed. In this case, the first four fields will be used.

Next, layout your format on print chart paper. The physical mailing label used in this example is $15/16$ " high and $3\frac{1}{2}$ " wide. The labels are 1" from top to top. Presuming a printer that prints 10 characters per inch and 6 lines per inch, each label is 6 lines high and 35 characters wide. However there must be room for the space between labels, therefore there are actually only 5 lines used for printing. The sample format will be set up for printing a label that has three lines of information on it; name, address, city/state/zip. Printing will start on the third line and the sixth line will be blank. Your design on chart paper should look like this:

FORMAT NAME MAILING LABEL											
EXAMPLE 1											
RECORD											
1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1

CREATE FORMAT

CHOOSE: option #17 Output Editor on the MENU SELECTION LIST. Press (RETURN).

You will see the following menu:

_____FORMAT GENERATOR_____

0) END
1) CREATE
2) EDIT
3) PRINT
4) SAVE

SELECT: 0

CHOOSE: option #1 CREATE. Press (RETURN).

FORMAT NAME: _____

You may enter any name that will identify this format for future use. A maximum of 25 characters can be used.

For the example . . .

TYPE: MAILING LABEL (RETURN).

You will then see the create format menu.

```
_____FORMAT GENERATOR_____
_____CREATE FORMAT_____

0) END

1) PRINTER INFORMATION
2) PRINT LOCATIONS
3) ASSIGNMENT & MATH
4) USER PROMPTS

SELECT: 0
```

Options 1-3 will be used in creating and saving this Output Editor format.

Printer Information is used to designate information particular to your printer, form size and type.

Print Locations is where you designate print positions based upon the layout you created on print chart paper, i.e., where each piece of information will be printed.

Assignment & Math commands are entered here to specify which fields are selected and moved into print positions.

User Prompts are introduced in example 4

NOTE: At the top of each screen or menu of Output Editor there are menu names indicating each part. The bottom line indicates which part of the routine is presently active. The preceding lines enable you to trace how you arrived at the current position in the routine. There is also a chart of menus at the end of this chapter which can help you find a desired section of Output Editor.

PRINTER INFORMATION

CHOOSE: option #1 PRINTER INFORMATION. Press (RETURN).

```

_____FORMAT GENERATOR_____
_____CREATE FORMAT_____
_____PRINTER INFORMATION_____

0)  END

1)  FORM END                2)  LINE FEED
    STOP OR CONT           REQUIRED
    <CONT>                  <NO>

3)  LEFT      4)  PRINT      5)  LINES PER
    MARGIN     COLUMNS     PAGE
    <1>        <132>        <66>

6)  PRINTER SLOT <1>      7)  CONTROLS: <NONE>

8)  CLOCK SLOT <0>       9)  CONTROLS:
    032

SELECT: 0
```

Each of the nine options have default values, the program will use these values unless you enter alternative ones.

1) FORM END: CONT (default)

Determine type of paper in printer. Print on single sheets "STOP" or continuous forms "CONT." Mailing labels use continuous forms.

2) LINEFEED: NO (default)

Most printers advance lines automatically; if yours does not, change line feed value to YES. If you are not sure whether your printer requires a line feed, leave NO default. When you make a printout, if the printer does not advance paper after each line, go back and change it to YES.

3) LEFT MARGIN: 1 (default)

This option controls margin size. Remember that no matter where you set the left margin, you will always print as many columns as designated under PRINT COLUMNS. For example, if you set left margin at 20 and indicate that 80 columns should be printed, printing will start on column 21 and end on column 100. As desired, a total of 80 columns will be printed.

4) PRINT COLUMNS: 132 (default)

This number determines how many columns, or characters, across will be printed. You may print up to 254 characters to a line; the actual number depends upon your printer capacity. If you have an eighty column printer, you may change this number to 80. Note that your format need not use all of the columns you designate.

5) LINES PER PAGE: 66 (default)

Your printout may have up to 249 lines per page. A standard page length (11 inches) is 66 lines for a printer with six lines per inch.

6) PRINTER SLOT: 1 (default)

Enter the slot in which your printer interface card is located in computer.

7) CONTROLS: NONE (default)

This option allows you to enter any control character that your printer recognizes.

NOTE: Many printers do not require control characters for standard print operation. If your printer does *not* require these characters, you may still wish to enter commands to activate special printer features.

8) CLOCK SLOT: 0 (default)

If you have a clock card, you may enter the slot in which it is located. You will then be able to have the time printed on your report.

9) CONTROLS: 032 (default)

If you have a clock, you should enter the necessary control characters **after** entering clock slot number. Refer to the manual which came with your clock for necessary control characters. The default control entry, 032, is the ASCII decimal equivalent of a space. This space is the most common entry required for having the time displayed in standard Mountain Computer's clock format. The standard format is: "mm/dd hh:mm:ss.mmm", where mm/dd is month and day, hh:mm:ss.mmm is hour, minute, seconds and milliseconds. Note that **two** spaces, not one, separate the date from the time.

Changing Printer Information

To change a value for options 1-5, 6 and 8 type the option number and press (RETURN). Type the new value and press (RETURN). Options 7 and 9 are explained in more detail.

The mailing label example requires at least the following changes.

CHOOSE: option #4. Press (RETURN).

PRINT COLUMNS: 132 000

For this example, you may enter 80 though not all columns will be used.

TYPE: 80 (RETURN)

For this mailing label example you will need 6 lines per page.

CHOOSE: option #5. Press (RETURN).

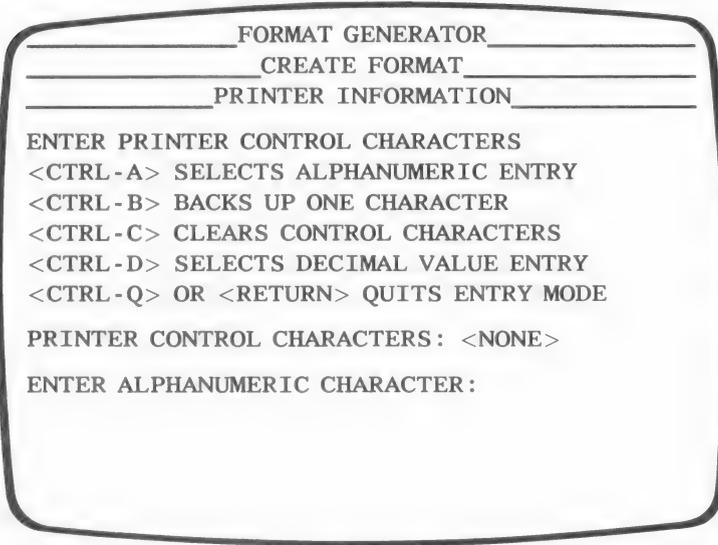
LINES PER PAGE: 66 000

TYPE: 6 (RETURN)

To enter necessary printer control characters...

CHOOSE: option #7. Press (RETURN).

The following screen will appear:



When printers require special commands, these may be in the form of control characters, e.g., CTRL-I or simple alphanumeric characters such as, 123a. They may also combine control characters and alphanumeric characters.

Alphanumeric characters can be entered directly.

Type <CTRL-A> from the menu and then enter necessary characters. Press (RETURN) after **each** character entry.

Printer control characters must *first* be translated into their decimal equivalents and these *equivalents* must be entered. To enter these values . . .

Type <CTRL-D> from the menu and then enter appropriate number.

For example, if your printer requires control characters CTRL-I 132N, enter the following:

1. TYPE: <CTRL-D>
2. TYPE: 9 (RETURN). (This is the decimal equivalent of CTRL-I.)

3. TYPE: <CTRL-A>

4. TYPE: 1 (RETURN)
3 (RETURN)
2 (RETURN)
N (RETURN)

The screen will display:

```
PRINTER CONTROL CHARACTERS :  
009 1 3 2 N
```

Spaces between characters which appear on screen will not affect outcome.

You can even enter ESC sequences as decimal entries.

To clear the entry . . .

TYPE: (CONTROL-C)

A full listing of ASCII control characters and their decimal equivalents can be found at the end of this chapter. Also refer to the manual which came with your printer for a full listing of commands that are required for operation.

For the practice example, enter any necessary characters for your printer.

PRESS: (RETURN) when you are finished and you will return to the PRINTER INFORMATION MENU.

To change clock slot number . . .

CHOOSE: option #8. Press (RETURN).

ENTER: Appropriate slot number. PRESS (RETURN).

WARNING: If you specify a slot for a clock and none exists when running the report in List/Report, the results will be unpredictable.

The same printer control characters are used for option #9 as for option #7. Follow instructions from option #7 for entering ASCII equivalent of necessary control characters.

A clock is not used for mailing labels.

PRESS: (RETURN).

After printer information has been entered . . .

TYPE: 0 (RETURN)

or simply . . .

PRESS: (RETURN)

Until you see the CREATE FORMAT MENU again.

Screen Display Hints: To output to your screen, set printer slot number to 0. Set column width at 39 to avoid excess line feed. If you have an eighty column board in your computer, set width (print columns) to 79. Set lines per page at 23 and form end on STOP. These values will ensure that your screen is set correctly.

PRINT LOCATIONS

Print locations is the part of Output Editor that makes use of the print chart paper layout that you design.

CHOOSE: option #2 on the CREATE FORMAT MENU. Press (RETURN).

The PRINT LOCATIONS MENU should be on screen:

```
_____
          FORMAT GENERATOR
_____
          CREATE FORMAT
_____
          PRINT LOCATIONS
_____

0) END

1) TOP OF FORM
2) RECORD
3) SUBTOTALS
4) TOTALS
5) BOTTOM OF PAGE

SELECT: 0
```

The print locations part of Output Editor is divided into five sections. You may include any or all of these sections in a report.

Mailing label formats are particularly simple to create. The format will only make use of one of these, #2 RECORD. There are no Top of form, Bottom of page, Subtotals or Totals sections.

For any of the sections you *do* include, you must establish for each:

1. The number of lines in the section.
2. Individual print positions.

Top of form section typically contains information which you want as a heading. It is printed at the top of *every* page.

Record section determines data you want taken from each record and printed on report.

Bottom of page section is printed at the bottom of *every* page, you may use this section to print footnotes or concluding information.

Subtotals section is activated each time data in a specified field changes. You must indicate subtotals you want printed at that point.

Totals section is activated after all records have been processed.

The Custom Output Processor in List/Report will:

1. Read the first selected record.
2. Move specified field data into print positions on label.
3. Read next record and print another label.

This process will continue until all selected records have been read and printed.

NOTE: Record selection is done within the List/Report routine where the report is printed, not when creating a format.

Enter Print Locations

The coordinates used in the example are taken from the layout on print chart paper.

CHOOSE: option #2 RECORD from the PRINT LOCATIONS MENU. Press (RETURN).

You will see the RECORD MENU.

```

_____FORMAT GENERATOR_____
_____CREATE FORMAT_____
_____PRINT LOCATIONS_____
_____RECORD_____

      0) END

      1) LENGTH OF SECTION
      2) PRINT POSITIONS
      3) NEW PAGE CONTROL

SELECT: 0
```

First, establish length of section. Each section that is used, i.e., Top of form, Record, Subtotals, Totals, and Bottom of page, need a value specified. This value sets the number of lines that section will occupy on a page when printed. For example, the page length is 66 lines, next line to be printed is on 60, and Record section has a length of 10 lines. The Custom Output Processor will skip to a new page before continuing to print that section.

Notice that on print chart paper, length of Record section is 6 lines per label. Lines 3, 4 and 5 are to contain data. The Output Processor will leave lines 1, 2 and 6 blank to use the entire area set for Record section.

CHOOSE: option #1. Press (RETURN).

```

_____
LENGTH IN LINES: 0 00
_____
```

TYPE: 6 (RETURN)

Enter Print Positions

CHOOSE: option #2 Print positions. Press (RETURN).

_____	FORMAT GENERATOR	_____
_____	CREATE FORMAT	_____
_____	PRINT LOCATIONS	_____
_____	RECORD	_____
_____	PRINT POSITIONS	_____
0) END		
1) ADD		
SELECT: 0		

CHOOSE: #1 ADD from the PRINT POSITIONS MENU. Press (RETURN).

_____	FORMAT GENERATOR	_____
_____	CREATE FORMAT	_____
_____	PRINT LOCATIONS	_____
_____	RECORD	_____
_____	ADD PRINT POSITIONS	_____
0) END		
1) CONSTANT		
2) CHARACTER		
3) LEFT JUSTIFIED NUMERIC		
4) RIGHT JUSTIFIED NUMERIC		
SELECT: 0		

The above options refer to the *type* of entry for each print position. Mailing labels will only use character fields. Constants and justified numeric fields are defined and used in further examples.

Character-type print positions are to be used when you want to print data as it would appear normally, without any formatting of the data other than specifying an optional starting character position.

CHOOSE: #2 CHARACTER (RETURN)



LINE 0 000

Enter line where printing is to begin.

Notice that on the chart layout, the first line of data begins on line 3 (refer to numbers on left hand side of paper).

TYPE: 3 (RETURN)

Next you are prompted to enter column number . . .



COLUMN 0 000

The first character of the line begins at column 1 (refer to numbers across top of paper).

TYPE: 1 (RETURN).



LENGTH OF FIELD: 0 000

Now enter desired length of field. Typically, length of field corresponds to field length established when data base is created, but this is not mandatory.

Refer to the File Info for the length of the NAME field. That number is 25 in the example.

TYPE: 25 (RETURN)

The next prompt asks you for starting character position.



STARTING CHARACTER POSITION: 1 000

This feature enables you to print a *portion* of a field. You could, for example, set this position at eight, indicating that printing will begin with the eighth character position of data in that field. The first seven characters would not be printed at this position. This option is most useful if a data field cannot fit on one line and must be split. Example 2 makes use of this feature.

NOTE: Starting with the first character is the default condition for a *new* print position. Press (RETURN) to accept the default without having to enter 1 each time.

For mailing labels, the entire data line is used starting with the first character in the field.

PRESS: (RETURN) to accept the default 1.

NAME	LINE	COLUMN	LEN	DESCRIPTION
P1	1	1	1	CHARS 1 THRU 25

ACCEPT OR CANCEL THIS LINE? (A/C) :

P1 stands for Print position 1. Carefully review the information that you have entered. If everything is correct . . .

TYPE: A (RETURN)

otherwise . . .

TYPE: C (RETURN)

After accepting it, you have entered print position information for the first line. You must now enter print positions for the remaining two lines of data.

IMPORTANT: If you ACCEPT information by mistake, do not try to correct it by re-entering correct information at this time. Doing so will only create *another* print position. Continue entering information for next position, you will have an opportunity to correct any mistakes when editing print positions.

CHOOSE: #2 CHARACTER from the ADD PRINT POSITIONS MENU. Press (RETURN).

Enter the following specifications. Press (RETURN) after each.

LINE	COLUMN	LENGTH OF FIELD	STARTING CHARACTER POSITION
4	1	30	1

CHOOSE: #2 CHARACTER from the ADD PRINT POSITIONS MENU. Press (RETURN).

Enter information for third print position.

LINE	COLUMN	LENGTH OF FIELD	STARTING CHARACTER POSITION
5	1	30	1

HINT: As you enter each print position from your layout, note on your print chart paper, the print position number (e.g., P1, P23, etc . . .) that Output Editor assigns to that location. These numbers will be important when you plan your commands for Assignment & Math later. It will be easier to match up the assigned print position numbers to the locations on your print chart locations as you enter the coordinates, than to match them up from the format printout later.

When you return to the ADD PRINT LOCATION MENU . . .

PRESS: (RETURN).

IMPORTANT: You have now told the program *where* everything is to be printed on the page (label), but have NOT yet told it *what* to print. That is the subject of Assignment and Math.

CHOOSE: #0 END. Press (RETURN).

The PRINT POSITIONS MENU will appear with an EDIT option added. Before continuing with Assignment and Math, you will learn how to edit print position information.

EDITING PRINT POSITIONS

CHOOSE: #2 EDIT from the PRINT POSITIONS MENU.

The following lines should be on your screen:

```
P1 P2 P3
WHICH? (0-END): 000
```

To change information, enter number of position. If you do not know which position you need to edit, the best strategy is to make a printout of the entries. You will be shown how to print information upon returning to the **FORMAT GENERATOR MENU**. If you do not have a printer, you must choose each position individually until you arrive at the desired one.

At this time choose to edit print position #2.

TYPE: 2 (RETURN)

Print position #2 corresponds to the line designated for **STREET** field.

You will see the following screen:

```
NAME LINE COLUMN LEN DESCRIPTION
                CHARS 1 THRU
P2    2     1     25                25
      0) END
      1) LINE
      2) COLUMN
      3) LENGTH & DESCRIPTION
      SELECT: 0
```

Option #1 allows you to change line on which to print.

Option #2 allows you to change column printing will begin.

Option #3 allows you to change *type* of print position (character, left or right justified) and then length and starting character.

A constant cannot be changed to a character or numeric field.

A print position cannot be deleted. A print position can be turned off by moving it to line 0 or a place on the page that is not going to be used.

Experiment with making changes but return entries to the correct information.

When you finish making changes . . .

TYPE: 0 (RETURN)

or simply . . .

PRESS: (RETURN) to end each menu, until you arrive at the RECORD MENU shown below.

_____FORMAT GENERATOR_____

_____CREATE FORMAT_____

_____PRINT LOCATIONS_____

_____RECORD_____

0) END

1) LENGTH OF SECTION

2) PRINT POSITIONS

3) NEW PAGE CONTROL

NEW PAGE CONTROL

The last option on RECORD MENU allows you to request a new page after each record is printed.

CHOOSE: #3 NEW PAGE CONTROL from the RECORD MENU.

The screen now looks like this:

```
_____FORMAT GENERATOR_____
_____CREATE FORMAT_____
_____PRINT LOCATIONS_____

NEW PAGE AFTER PRINTING: NO
NEW PAGE AFTER PRINTING? (Y/N):
```

Custom Output Processor automatically prints every selected record according to the format you have just created in Output Editor. You have the option of printing as many records as can fit on 1 page before advancing page or you may have *every* record printed on a separate page.

If you choose a new page after printing, the program will automatically skip remaining lines on page, and print next record on next page.

In the example, you designated 6 lines per page under printer information, since you also designated 6 lines as your length of section, the program “knows” that another record will not fit on same label; therefore, it will *automatically* skip to next label whether or not you indicate NEW PAGE AFTER PRINTING.

If, however, you had indicated a page length which allowed for more than one record per page and you did *not* want more than one record per page (label, form, etc.), you would have to answer YES to NEW PAGE AFTER PRINTING prompt.

For the example, leave NEW PAGE option at NO . . .

PRESS: (RETURN)

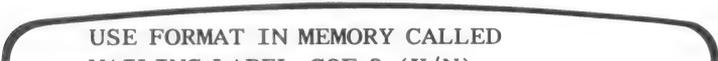
Print Format Information

As discussed in Edit section, it is best to obtain a printout of format information. Refer to it if the report does not print the way you anticipated. To do this . . .

PRESS: (RETURN) to end each menu until you are back to the FORMAT GENERATOR MENU.

CHOOSE: #3 PRINT. Press (RETURN).

The program then asks:



USE FORMAT IN MEMORY CALLED
MAILING LABEL.COF ? (Y/N) :

Notice that .COF has been attached to mailing label format. This stands for Custom Output Format.

TYPE: Y (RETURN)

IMPORTANT: A format prints to the slot specified within Printer Information. Printer control codes are also used before printing begins. This is significant if a different printer is used to create or edit a format from the printer the report will normally be run. If your format is to display 80-columns, to print your format, temporarily change the printer slot. The value in Print Columns is also a factor in how the format will be sent to a monitor or printer.

Look at the printout for MAILING LABEL. The filename is followed by printer information and then print position numbers the program assigned to each of the entries.

On either the format listing or the print chart paper write field numbers next to corresponding print positions.

If everything is in order skip to the section, Entering Data for Printout.

If you need to edit printer information . . .

CHOOSE: #2 EDIT from the FORMAT GENERATOR MENU.

USE THE FORMAT IN MEMORY CALLED
MAILING LABEL.COF ? (Y/N)

TYPE: Y

CHOOSE: #1 PRINTER INFORMATION from the EDIT FORMAT MENU.

You can then change any of the printer information entries.

If you need to edit a print position . . .

CHOOSE: #2 EDIT from the FORMAT GENERATOR MENU
(RETURN)
#2 PRINT LOCATIONS (RETURN)
#2 RECORD (RETURN)
#2 PRINT POSITIONS (RETURN)
#2 EDIT (RETURN)

ENTER: the print position by number and make any necessary changes.

PRESS: (RETURN) until you are back to the FORMAT GENERATOR MENU.

ENTERING DATA FOR PRINTOUT

Simple Assignment & Math

The program has not been given commands for the data that is to be printed in each of the established positions.

Assignment & Math gives Output Editor most of its power. You can combine math with your outputs, calculating and placing results on reports or directly to the data base. There are 45 commands that Assignment and Math can use. However, for the simple data movement needed to create mailing labels only 2 used. In later examples and at end of chapter all commands are defined.

CHOOSE: #2 EDIT from the FORMAT GENERATOR MENU.
Press (RETURN).

TYPE: Y (RETURN) to confirm using the format in memory.

CHOOSE: #3 ASSIGNMENT & MATH. Press (RETURN)

Once again you see the menu containing the format sections. Since print positions were only entered for the Record section, you only need Assignment and Math instructions for that section.

CHOOSE: #2 RECORD from the ASSIGNMENT AND MATH MENU.

```
_____
      FORMAT GENERATOR
_____
      EDIT FORMAT
_____
      ASSIGNMENT AND MATH
_____
      RECORD
_____

<CTRL-A> ADVANCES A COMMAND
<CTRL-B> BACKS UP A COMMAND
<CTRL-D> DELETES LAST COMMAND
<CTRL-E> GO TO END OF LIST
<CTRL-Q> QUIT EDIT MODE

_____
```

These control keys are used to make corrections and to determine where a command line is placed. The line indicates where Assignment & Math commands are entered. Complete an entire line before trying to delete last command.

For now, the commands you need to know are:

MOVE: Type **M**, **MOV**, or **MOVE** as an instruction and press (RETURN). This command moves data from one location to another location. In this example, you will always be moving data from a field to a print position, but greater flexibility is available and will be demonstrated in further examples.

APPEND: Type **A**, **APP**, or **APPEND** as an instruction and press (RETURN). This command adds the contents of a specified location or a constant directly to the end of another specified location.

Move Fields to Print Positions

You will now specify movement of the following fields to print positions, i.e., determine which fields will be printed.

F1	COMPANY NAME	Print Pos. 1
F2	STREET	Print Pos. 2
F3 & F4	CITY/STATE ZIP	Print Pos. 3

Notice that field #4 will be appended to field #3, so there is only one print position for both fields.

IMPORTANT: Each STEP in Assignment & Math may be made of several parts. In order to complete a COMMAND LINE and get the desired RESULT, you must press the RETURN key after each part of the instruction. The program will understand the COMMAND LINE and process the operation as you had anticipated.

Now enter each part of STEP 1.

TYPE: M (RETURN)

You see the MOVE command and are asked what you wish to move.

MOVE (F,R,P,U,X,C):

F)IELD R)EGISTER P)RINT LOCATION
U)SER FIELD X) STACK C)ONSTANT

Since you need to move a field, you will use the F option.

TYPE: F (RETURN)

The program asks which field you wish to move.

MOVE FOO

You want to move field 1.

TYPE: 1 (RETURN)

The program asks where you want to move field 1.

MOVE F1 TO (F,R,P,U,X).

TYPE: P (RETURN) to move it to a Print position.

The program asks you to enter the print position where field #1 is to be printed. You are moving it to print position #1.



MOVE F1 TO P000

TYPE: 1 (RETURN)

If the command line was entered correctly it has moved up and now reads:



1 MOVE F1 TO P1

With this series of commands, you have instructed the program to move field #1 to print position #1.

IMPORTANT: If you type each command line: M F 1 P 1, without pressing the RETURN key after each of these parts, you would see:

“M F 1 P 1”

The program was not instructed properly, and did not recognize the commands. Therefore quotation marks were placed around it. The operation would not be successful. You should only see quotation marks when you enter constants.

NOTE: Had a print position not been designated in Record section Print Locations, you would receive the message: UNDEFINED LOCATION <CR> TO CONTINUE

In this situation you would press (RETURN) and back out of the step using (CONTROL-B). A print position would have to be designated in the appropriate Print Location section where the error occurred. (In this example it is Record section.)

Now enter the other three command lines as shown below.

STEP 2

The following series of commands move field #2 to print position #2.

TYPE: M(RETURN)
F (RETURN)
2 (RETURN)

P (RETURN)

2 (RETURN)

The command line for step 2 should be: MOVE F2 TO P2.

STEP 3

Now move field #3 to print position #3.

TYPE: M(RETURN)

F (RETURN)

3 (RETURN)

P (RETURN)

3 (RETURN)

The command line should be: MOVE F3 TO P3.

NOTE: APPEND is the command that attaches field #3 to field #4. The APPEND command adds directly to the end of the target location. To keep the ST ZIP data from being added to the immediate end of the CITY data on the label, a constant, i.e., comma, space, quotation mark, must be appended to separate the two fields.

STEP 4

TYPE: A (RETURN)

C (RETURN)

The program asks for the constant you wish to append.

APPEND “ _____ ”

You need to append a “ , ” to the print position before adding the ST ZIP field.

TYPE: , “ (RETURN)

The closing quote is needed to keep the space after the comma from being removed. If the closing quote was not entered, Output Editor would conserve memory by removing trailing spaces. Only the comma would have remained. The closing quote is only required when trailing spaces are to be part of a constant.

TYPE: P (RETURN)

3 (RETURN)

The command line should be: APPEND “ , ” TO P3.

Now append field #4 to print position #3.

STEP 5

TYPE: A (RETURN)
F (RETURN)
4 (RETURN)
P (RETURN)
3 (RETURN)

The command line for step 5 should be: APPEND F4 TO P3.

TYPE: (CONTROL-Q)

PRESS: (RETURN) until you are back to the FORMAT GENERATOR MENU.

Print Format

CHOOSE: #3 PRINT. Press (RETURN).

TYPE: Y to USE FORMAT IN MEMORY. Press (RETURN).

After the format has been printed and you have been returned to the FORMAT GENERATOR MENU...

CHOOSE: #0 END. Press (RETURN).

SAVE CURRENT FORMAT IN MEMORY
MAILING LABEL.COF ? (Y/N) :

Save the format to use it with the Custom Output processor.

TYPE: Y (RETURN)

SAVE FORMAT IN MEMORY AS
MAILING LABEL.COF ? (Y/N) :

You have the option to rename the format before saving it. Keep the same name.

TYPE: Y (RETURN)

The format is written to disk and you return to the MENU SELECTION LIST.

Print Mailing Labels

CHOOSE: #12 LIST/REPORT from the MENU SELECTION LIST. Press (RETURN)

CHOOSE: the order you want the records to be printed.

CHOOSE: #1 AS ENTERED from the LIST OPTIONS.

For the example . . .

TYPE: 1-10 (RETURN)

After confirming record selection . . .

CHOOSE: #2 MICRO LAB CUSTOM from the OUTPUT PROCESSOR MENU.

Place Format disk into drive #2 when prompted and press (RETURN).

CHOOSE: number corresponding to MAILING LABEL Format.

Place Data disk into drive #2 when prompted.

The data will be transferred from the file onto paper in specified print positions. All labels will be printed.

IMPORTANT: When printing records in sorted order, any record that has no data in a sorted field will be placed first in sorted order. The printout will have blanks for empty fields. All empty (deleted) records are placed first in sorted order, as well, until the file is rewritten using the Reconfigure routine. Paper will feed through the printer for empty records, but nothing will be printed until it finds a record with data.

EXAMPLE 2

The basic principles used to create this and all formats is the same as that for creating the mailing label format.

1. Design layout of format on print chart paper.
2. Enter print positions for all five print locations.
3. Move data from records into print locations using Assignment & Math.

Example 2 uses that which you learned in mailing label and shows more of Output Editor's power. The format is set up to

generate a report using ACCOUNTS PAYABLE CHECKS sample data base created in the Reconfigure routine.

Additional features that Example 2 will introduce you to will be:

- Use of all five print locations, **Top of Form, Record, Subtotal, Total, and Bottom of Page.**
- Print position types **constant** and **justified numeric.**
- More powerful applications of print positions, such as **print positions within print positions** and **splitting field data** to split the contents of one field into two (or more) print positions.
- The use of commands like **FILENAME** and **PAGE#** which supply information not found within the data base.
- How to obtain **subtotals** and **totals** by tallying field contents into **storage-registers.**
- The specification of a **break field** to signal when subtotals are to be printed.

This sample format is to produce a report of the records in the Accounts Payable data base on page 196. Custom output formats, after they are created, are not tied to a specific data base. They can be used by other data bases, provided the fields referenced contain comparable information. For this reason, the FILENAME command will be used to provide a subtitle to this report which will be titled "ACCOUNTS PAYABLE". Custom field headings will be printed at the top of each page to identify the fields that will be used in this report. Tallies will be kept to provide the values printed in the Subtotals and Totals section. Each page of the report will be numbered.

The print chart example shows where print positions will be placed.

PRINT POSITIONS FOR EXAMPLE 2

CHOOSE: #17 OUTPUT EDITOR from the MENU SELECTION LIST. Press (RETURN).

CHOOSE: #1 CREATE from the FORMAT GENERATOR MENU. Press (RETURN).

This example is named Example 2.

TYPE: EXAMPLE 2. Press (RETURN)

PRINTER INFORMATION

CHOOSE: #1 PRINTER INFORMATION. Press (RETURN)

Lines per page = 66 since printing will be done on standard size paper.

Print columns = 79 since some printers automatically insert an extra carriage return if all 80 columns are used.

Since a new format is being created, enter any of the control characters that your printer requires. (See example 1)

PRINT LOCATIONS

Print locations are now entered for all 5 sections of report.

Top of form section typically contains information which you want as headings, filename, or report name. The information is printed at the top of *every* page.

Record section determines data you want taken from each record and printed.

Subtotals section is activated each time data in a specified field (break field) changes. This section will be used to print subtotals you have tallied in Record section.

Totals section is activated after all records have been processed. You can print totals of the fields that have been tallied.

Bottom of page section is printed at the bottom of *every* page, you may use this section to print footnotes or concluding information.

The line numbers within each print location section, start at 1. This is so that changes in the length of section in any of the print locations will not affect any other print location section. Line numbers within a print location section are therefore relative to the beginning line of that section.

CHOOSE: #2 PRINT LOCATIONS. Press (RETURN)

Top of Form Print Positions

This example prints: a report title, filename, and headings (constants) for each piece of data on the report.

CHOOSE: #1 TOP OF FORM. Press (RETURN)

```
_____FORMAT GENERATOR_____
_____CREATE FORMAT_____
_____PRINT LOCATIONS_____
_____TOP OF FORM_____

      0) END

      1) LENGTH OF SECTION
      2) PRINT POSITIONS

SELECT:
```

CHOOSE: #1 LENGTH OF SECTION from the TOP OF FORM MENU. Press (RETURN).

The Top of form section is 9 lines long.

TYPE: 9 (RETURN)

CHOOSE: #2 PRINT POSITIONS. Press (RETURN)

CHOOSE: #1 ADD. Press (RETURN).

_____ FORMAT GENERATOR _____
_____ CREATE FORMAT _____
_____ PRINT LOCATIONS _____
_____ TOP OF FORM _____
_____ ADD PRINT POSITIONS _____

0) END

1) CONSTANT

2) CHARACTER

3) LEFT JUSTIFIED NUMERIC

4) RIGHT JUSTIFIED NUMERIC

SELECT:

The **Constants** option gives you the opportunity to place anywhere on the report: titles, headings or any other descriptive words needed that are not part of the data in your file. This is where the Output Editor for Custom Output begins to offer more flexibility over Standard Output.

The **Character** option is used to place anywhere on the report **data** in the fields. Any portion of the field can be printed.

The **Starting Character Position** you are asked for when using Character option determines the **first character of data** in a field you want printed. The **length of field** determines the **last character of data** in the field you want printed. This permits you to *split* a field. You can print a portion of a field or print part of the field one place and remainder at another place.

The **Left justified** option prints a number at the left starting position of the print position with a specified number of decimal places.

The **Right justified** option prints the number as stated above with the last decimal place located at the last position of the print position.

The constant, ACCOUNTS PAYABLE, is printed at the top of every page in the example.

CHOOSE: #1 CONSTANT. Press (RETURN).

You are asked for the line the constant is to be placed. The first line is left blank and the heading is printed on line 2.

TYPE: 2 (RETURN)

You are now prompted to enter the column that the heading will begin.

TYPE: 23 (RETURN)

A screenshot of a terminal window showing a menu titled "FORMAT GENERATOR". The menu items are listed on lines with blank spaces for input:

- _____ FORMAT GENERATOR _____
- _____ EDIT FORMAT _____
- _____ PRINT LOCATIONS _____
- _____ TOP OF FORM _____
- _____ ADD PRINT POSITIONS _____

Below the menu items are two options:

- 1) FIXED LENGTH
- 2) FREE FORMAT

At the bottom of the menu is the prompt "SELECT:".

The length of the constant may be indicated in one of two ways.

Fixed length is used to enter a line or any string of identical characters of a certain length. If you want to make certain that your constant never exceeds a designated length, choose this option.

Free format is used to enter a constant directly. You do not have to bother counting the number characters in the constant. It is up to you to make certain that the constant does not exceed the desired length.

Free format coincides with the number entered for **print columns** in Printer Information. For this example, if your constant starts at column 1, you can enter up to 79 characters. If you chose to start at column 50, you would have space to enter a constant of up to 29 characters, thus using columns 50 through 79.

CHOOSE: #2 FREE FORMAT. Press (RETURN).

TYPE: A C C O U N T S P A Y A B L E (RETURN)

NAME	LINE	COLUMN	LEN	DESCRIPTION
P1	2	23	30	' 'A C C O U N T S' ' P A Y A B L E ' '

ACCEPT OR CANCEL THIS LINE? (A/C):

Notice that the LEN (length) was entered for you and you did not have to count the characters before entering them.

If everything is correct Accept it, otherwise Cancel it and enter this print position again.

Continue to enter the following print positions (2-9) for Top of form. Remember, press (RETURN) after each instruction. These coordinates match print chart example 2.

COORDINATES

RESULTS

P2

#2 Character

Line: 4

Column: 26

Length: 25

Starting Character

Position: 1

The filename will be assigned to print position 2.

P3

#1 Constant

Line: 6

Column: 1

#1 Fixed Length

Length: 79

Constant:

Print a line across page to separate name of report from column headings.

Hold down the DASH until the computer beeps. You are stopped upon reaching the 79th dash. (Hold down the REPT key and the dash on the Apple Plus.)

COORDINATES

RESULTS

P4

#1 Constant

Line: 7

Column: 6

#2 Free Format

Constant: COMPANY

Print a COMPANY heading

P5

#1 Constant

Line: 7

Column: 31

#2 Free Format

Constant: DESCRIPTION

Print a DESCRIPTION heading

P6

#1 Constant

Line: 7

Column: 62

#2 Free Format

Constant: DUE DATE

Print a DUE DATE heading

P7

#1 Constant

Line: 8

Column: 12

#2 Free Format

Constant: PHONE NUMBER

Print a PHONE NUMBER heading

P8

#1 Constant

Line: 8

Column: 72

#2 Free Format

Constant: AMT DUE

Print an AMT DUE heading

COORDINATES

RESULTS

P9

#1 Constant

Line: 9

Column: 1

#1 Fixed Length

Length: 79

PRESS: dash until computer beeps.

*Print a line across page to
separate headings from data.*

PRESS: (RETURN) until you are back to the PRINT LOCATIONS MENU.

Record Print Positions

The Record section's print positions determine where data from each field is printed.

The Record section of the sample report is printed on 2 lines. Data is positioned under respective headings. The Record section uses print positions 10-17.

The area code (AC field) is placed within parentheses by placing a print position within another. Output Editor allows print positions to overlap. Each print position lays out its contents at the specified columns. In an overlap situation, constants are positioned on the printed line first, followed by character fields, left justified, and right justified numerics, respectively. The topmost would be the only one visible for each column. After all of the print positions for a line have been processed, the line is printed. The command lines are sorted and you can see on the format printout the order of priority the print positions will be handled in the Custom Output processor of List/Report.

CHOOSE: #2 RECORD from the PRINT LOCATIONS MENU.
Press (RETURN).

CHOOSE: #1 LENGTH OF SECTION. Press (RETURN).

TYPE: 2 (RETURN)

CHOOSE: #2 PRINT POSITIONS from the RECORD MENU.
Press (RETURN).

CHOOSE: #1 ADD from the PRINT POSITIONS MENU. Press (RETURN).

Press (RETURN) after **each** coordinate to get the result in italics.

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR	or CONSTANT
------	-------	------	--------	--------	------------	-------------

P10	2 (Char)	1	6	24	1	
-----	----------	---	---	----	---	--

COMPANY NAME field will be assigned to print position 10.

P11	2 (Char)	1	31	30	1	
-----	----------	---	----	----	---	--

The first 30 characters of data in DESCRIPTION field will be assigned to print pos. 11.

P12	2 (Char)	1	62	8	1	
-----	----------	---	----	---	---	--

DUE DATE field will be assigned to print pos. 12

P13	1 (Con)	2	11	1 (Fixed)	()	
-----	---------	---	----	-----------	-----	--

Print () around area code. Three spaces separate parentheses.

P14	2 (Char)	2	12	3	1	
-----	----------	---	----	---	---	--

Place P14 within P13 to print AREA CODE within parentheses. AC field will be assigned to print pos. 14.

P15	2 (Char)	2	17	8	1	
-----	----------	---	----	---	---	--

PHONE NUMBER field will be assigned to print pos. 15.

P16	2 (Char)	2	31	30	31	
-----	----------	---	----	----	----	--

The last 30 characters of data in DESCRIPTION field will be assigned to print pos. 16.

P17	4 (RJ)	2	71	9	2 (decimal places)	
-----	--------	---	----	---	--------------------	--

AMT DUE field will be assigned to print pos. 17. It is right justified so the decimals are aligned.

PRESS: (RETURN) until are back to the PRINT LOCATIONS MENU.

Subtotals Print Position

The Subtotals section is activated every time data in a specified field changes. The specified field is referred to as a **break field**.

For example, records may be sorted on the Due Day field. Records with the same date are processed sequentially. When the date in Due Day field changes, the Subtotals section of the report is processed and the tally is moved into desired print position. Once the Subtotal section for the first group of records has been processed, a new tally is kept for the next group. The method of obtaining and printing subtotals and totals is explained within Assignment & Math section.

NOTE: Sort records on the field you specify for break field before processing a Custom Output format if using Subtotals section.

The processing works as follows: A record is read and data in specified break field is "remembered." When each subsequent record is read, data in break field is compared to "remembered" data. When data does not match, the program processes Subtotal section.

CHOOSE: #3 SUBTOTALS from the PRINT LOCATIONS MENU. Press (RETURN).

CHOOSE: #1 LENGTH OF SECTION. Press (RETURN).

The Subtotal section in the example is 3 lines long.

TYPE: 3 (RETURN)

CHOOSE: #2 PRINT POSITIONS. Press (RETURN).

CHOOSE: #1 ADD. Press (RETURN).

Enter the following print positions (18-22).

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR or CONSTANT
P18	1 (Con)	1		1 (Fix) 79	Press dash until computer beeps.

Print a line across page separating subtotals from other sections.

P19	1 (Con)	2	1	2 (Free)	SUBTOTALS
-----	---------	---	---	----------	-----------

Print SUBTOTALS heading.

P20	1 (Con)	2	63	2 (Free)	AMT DUE
-----	---------	---	----	----------	---------

Print AMT DUE heading.

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR or CONSTANT
P21	4 (RJ)	2	71	9	2 (decimal places)

Amount due subtotals will be assigned to print pos. 21.

P22	1 (Con)	3	1	1 (Fix) 79	Press dash until computer beeps.
-----	---------	---	---	---------------	--

Print a line to separate subtotals from other sections.

(RETURN) to SUBTOTALS MENU

CHOOSE: #4 SUBTOTAL BREAK FIELD from the SUBTOTALS MENU. Press (RETURN).

SUBTOTAL BREAK NOT SELECTED

BREAK ON FOO

Select field #9 to break on DUE DATE.

TYPE: 9 (RETURN)

(RETURN) to PRINT LOCATIONS MENU.

Totals Print Positions

The tallies that are kept for Amount Due field will be totaled and printed on one line at end of report. Double lines separate totals from other sections.

CHOOSE: #4 TOTALS from the PRINT LOCATIONS MENU. Press (RETURN).

CHOOSE: #1 LENGTH OF SECTION. Press (RETURN).

TYPE: 3 (RETURN)

CHOOSE: #2 PRINT POSITIONS. Press (RETURN).

CHOOSE: #1 ADD. Press (RETURN).

Enter print positions 23-27 for Totals section:

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR or CONSTANT
P23	1 (Con)	1	1	1 (Fix) 79	Press = (equal key) until computer beeps.

Print a double line to separate sections

P24	1 (Con)	2	1	2 (Free)	TOTALS
-----	---------	---	---	----------	--------

Print TOTALS heading.

P25	1 (Con)	2	1	2 (Free)	AMT DUE
-----	---------	---	---	----------	---------

Print AMT DUE heading.

P26	4 (RJ)	2	71	9	2 (decimals)
-----	--------	---	----	---	--------------

*The value in Register 2 will be assigned to print pos. 26.
Decimals will be aligned.*

P27	1 (Con)	3	1	1 (Fix) 79	Press = (equal key) until computer beeps
-----	---------	---	---	---------------	--

Print a double line to separate from other sections of the report.

(RETURN) to PRINT LOCATIONS MENU.

Bottom of Page Print Positions

This section is also quite simple. Print positions are assigned to place page numbers at the bottom right hand side of each page. The *command* to print page numbers is entered in Assignment and Math.

CHOOSE: #5 BOTTOM OF PAGE from the PRINT LOCATIONS MENU. Press (RETURN).

CHOOSE: #1 LENGTH OF SECTION. Press (RETURN).

TYPE: 2 (RETURN)

CHOOSE: #2 PRINT POSITIONS. Press (RETURN).

CHOOSE: #1 ADD. Press (RETURN).

Enter the following print positions (28-29) for Bottom of page section.

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR or CONSTANT PAGE
P28	1 (Con)	2	72	2(Free)	

Print PAGE heading.

P29	3 (LJ)	2	77	3	0 (decimals)
-----	--------	---	----	---	--------------

PAGE# command will be assigned to print pos. 29.

(RETURN) to the FORMAT GENERATOR MENU.

Assignment & Math for Example 2

So far, as in the first example, all that has been done is to lay out the format as to *where* everything is to be printed on the page. The job of Assignment & Math is to tell the program *what* to print. Fields are assigned to print positions and mathematical calculations are performed.

You need the print position numbers in front of you to match Assignment and Math commands.

CHOOSE: #3 PRINT from the FORMAT GENERATOR MENU. Press (RETURN).

Review print positions with print chart example. On the printout of the format, label each print position which is not a constant with corresponding field numbers.

Top of Form Assignment & Math

On the top of each form, the name of the data base is to be printed. The command **FILENAME** will move the name into the supplied print position.

CHOOSE: #2 EDIT from the FORMAT GENERATOR MENU. Press (RETURN).

CHOOSE: #3 ASSIGNMENT & MATH. Press (RETURN).

CHOOSE: #1 TOP OF FORM. Press (RETURN).

TYPE: FILENAME (RETURN)

TYPE: 2 (RETURN)

TYPE: (CONTROL-Q) to quit.

Record Assignment & Math

In Record section you will be moving data directly from the data base into print positions. You will also be performing some simple mathematical calculations in order to keep a running tally of the Amount Due for subtotals and a total.

For each record, the company name, description, phone number, etc. must be **MOVED** to the appropriate print position. Note that the DESCRIPTION field must be moved two separate times, to P11 for the first half of the field and to P16 for the second half. Remember that it is the description of the print position that determines how much of the field is printed.

Now enter each part of instruction for the command line in STEP 1:

TYPE: M (RETURN)
 F (RETURN)
 1 (RETURN)
 P (RETURN)
 10 (RETURN)

The following results will occur only if you remember to press (RETURN) after each part of instruction in the command line. Enter STEPS 2-7.

STEP	COMMAND LINE	RESULTS
2	MOVE F7 TO P11	Print DESCRIPTION field at print pos. 11
3	MOVE F7 TO P16	Print DESCRIPTION field at print pos. 16
4	MOVE F9 TO P12	Print DUE DAY field at print pos. 12
5	MOVE F5 TO P14	Print AC (area code) field at print pos. 14

STEP	COMMAND LINE	RESULTS
6	MOVE F6 TO P15	Print PHONE # field at print pos. 15
7	MOVE F8 TO P17	Print AMT DUE field at print pos. 17

The calculation of subtotals is not an automatic operation as it is in Standard Output. In Custom Output, the fields that are to be summed must be done under your guidance. This allows much more flexibility over Standard Output, as will be seen in later examples. For this example, the AMOUNT DUE fields are to be subtotaled and totaled.

In Custom Output, **all** mathematical operations involve the use of the numeric **stack-registers**, and will be covered in greater detail in example 3. In this example, it is only necessary to **MOVE** the AMOUNT DUE field to the **X** stack-register so that it may be **SUMmed** to a **storage-register**. This is equivalent to a pocket calculator where you key a number to the display and then press SUM or M+ to add the contents of the display to a memory register. For this example, the **X** stack-register is the equivalent to the calculator display and the storage-register is like the memory register. In the calculator, when SUM or M+ is pressed, the display is unchanged, but the contents of the display is added to the previous contents of the memory register. In Custom Output, the **X** stack-register remains the same and its contents are added to the previous contents of a storage-register. The difference is that **there are 201 storage-registers (numbered R0 through R200)** instead of a single memory register on a pocket calculator.

STEP	COMMAND LINE	RESULTS
8	MOVE F8 TO X	Place AMT DUE field in (X) stack-register

(Whereas you may type M for the MOVE command, SUM is typed in full.)

9	SUM R1	Tally AMOUNT DUE and store in (R)register 1
---	--------	---

TYPE: (CONTROL-Q) to quit.

(RETURN) to ASSIGNMENT & MATH MENU.

Subtotals Assignment & Math

The Subtotal section is processed when the break field changes.

Within the Subtotal section, you will **MOVE** the value contained in Register 1 into an appropriate Print position.

You will also keep a running tally of subtotals to get a grand total of **AMOUNT DUE**.

The method used for keeping the tally for totals will be the same as that for keeping the subtotal.

MOVE value in **storage-register 1** (subtotal) to **X** stack-register where it can be **SUMmed** to another **storage-register** used for keeping a total tally. In the example, you will store the tally in register 2.

After **SUMming** the value in storage-register 1 to the value in storage-register 2; you must **CLEAR** storage-register 1 so that the next group of records (after break) can be subtotaled.

Enter the following Subtotal Assignment & Math steps 1-4. Press (RETURN) after each instruction in the command line.

STEP	COMMAND LINE	RESULTS
1	MOVE R1 TO P21	Print subtotal tally at print pos. 21
2	MOVE R1 TO X	Move amt. due tally to X stack-reg. for SUMming.
3	SUM R2	Add amt. due tally directly to value in reg. 2
4	CLR R1	Set reg. 1 to 0. Subtotals are printed when data in break field changes. New subtotal must start with 0 in reg. 1.

TYPE: (CONTROL-Q) to quit.

(RETURN) to ASSIGNMENT & MATH MENU.

Totals Assignment & Math

The Total section is very simple. **MOVE** value in register 2, which is the grand total, to appropriate print position. This involves only 1 step.

STEP	COMMAND LINE	RESULTS
1	MOVE R2 TO P26	Print grand total in reg. 2 at print location #26

TYPE: (CONTROL-Q) to quit.

Bottom of Page Assignment & Math

In Bottom of page you take advantage of Custom Output's automatic pagination capability. Simply instruct the program to paginate the report by entering the command **PAGE#** (RETURN) and assigning a print position (RETURN). The program will print the correct page number in specified print position.

There is only one Assignment & Math step for Bottom of page section.

STEP	COMMAND LINE	RESULTS
1	PAGE# TO P29	Print page number at print pos. 29.

TYPE: (CONTROL-Q) to quit.

(RETURN) to the FORMAT GENERATOR MENU.

Turn on printer and print out format.

CHOOSE: #3 PRINT. Press (RETURN).

PRINT REPORT

In order to use this format, fields in your sample Accounts Payable Checks file should contain the following data:

- amounts in AMT DUE field.
- phone numbers in PHONE # field.
- area codes in AC field.

- more than 1 record with the same date in DUE DATE field to see subtotals printed after the break field.
- more than 30 characters in DESCRIPTION field to see the split.

HINT: Sort records on due day field by ascending date before printing records with the Custom Output option in List/Report.

To see a report printed in this format . . .

CHOOSE: option #12 List/Report from the MENU SELECTION LIST.

Choose the list option you wish to use and make records selection, unless survivor list is being used.

CHOOSE: option #2 Micro Lab's Custom Output.

Load the sample format when prompted and use it to print.

NOTE: to stop the printer.

TYPE: (CONTROL-Q) to abort printing the same as you would in Standard Output.

Example 3 illustrates how to edit and add to the format.

EXAMPLE 3 - EDIT CUSTOM OUTPUT FORMAT

This example shows the editing capabilities of the Custom Output Editor. By editing the format from Example 2, you will make a more detailed report. Make sure that you have the printout of the Example 2 format in front of you.

The print chart layout shows the numbers for print positions that are edited or added to this example.

The revised report will include the following characteristics:

- Multiply and subtract data in fields and then move the result of the calculation into a print position. This will involve a more comprehensive use of the **stack-registers**.
- Take the date from the first record on the page and print it at the bottom of the page. This will demonstrate the ability to assign data within one section to be printed within another.
- Print record numbers using the **RECORD#** command.
- Add and move column headings and fields.

CHOOSE: #17 OUTPUT EDITOR from the MENU SELECTION LIST. Press (RETURN).

CHOOSE: #2 EDIT. Press (RETURN).

When prompted, insert the format disk that contains the Accounts Payable Checks format from the previous example.

ENTER: the number of the Example 2 format.

Printer information remains the same.

PRINT LOCATIONS FOR EXAMPLE 3

Print positions must be provided on the different parts of the page for the additional fields and calculations in each of the print location sections. Previously created print positions will be moved to new locations on the page.

All of the coordinates have been taken from the above print chart example.

Top of Form Print Positions

CHOOSE: #2 PRINT LOCATIONS (RETURN)
#1 TOP OF FORM (RETURN)

The length of the Top of form section will remain the same, i.e., 9 lines.

CHOOSE: #2 PRINT POSITIONS (RETURN)

0) END

1) ADD

2) EDIT

SELECT:

CHOOSE: #2 EDIT (RETURN)

EDIT PRINT POSITIONS

P1 P2 P3 P4 P5 P6 P7 P8 P9

WHICH? (0-END):

The above are print positions that can be edited. The amount due column heading resides in P8. It is being moved up 1 line.

TYPE: 8 (RETURN)

NAME	LINE	COLUMN	LEN	DESCRIPTION
P8	8	72	7	'AMT DUE'

0 END

1 LINE

2 COLUMN

3 LENGTH & DESCRIPTION

SELECT:

The only restriction when editing a format is the *type* of description. If a print position has been designated as a Character, Right or Left Justified print position it cannot be changed to a Constant. Conversely, a Constant cannot be changed to a Character, Right or Left justified print position.

CHOOSE: #1 LINE (RETURN)

TYPE: 7 (RETURN)

(RETURN) to PRINT POSITIONS MENU.

Four constants for column headings are added to this format.

The current format contains a total of 29 print positions. Print positions 30-33 are added in Top of form.

CHOOSE: #1 ADD (RETURN)

Press (RETURN) after each coordinate.

NAME	DESC.	LINE	COLUMN	LENGTH	CONSTANT
P30	1 (Con)	7	1	2 (Free)	REC.
P31	1 (Con)	8	1	2 (Free)	NUM.
P32	1 (Con)	8	61	2 (Free)	DEDUCTION
P33	1 (Con)	8	72	2 (Free)	DED AMT

(RETURN) to PRINT LOCATIONS MENU.

Record Print Positions

The length of Record section will remain the same, i.e., 2 lines.

In Record section you will:

- move the amount due print position up 1 line to provide room on the page for additional print positions.
- add a print position for the record number.
- add a print position to contain the deduction as a right justified numeric.
- add a print position of a constant to contain the constant - *minus sign*.
- add a print position to contain the deduction after a calculation is performed.

CHOOSE: #2 RECORD (RETURN)

#2 EDIT (RETURN)

Edit P17. Change the line number to 1.

(RETURN) to PRINT POSITIONS MENU.

Print positions 34-37 will now be added to the format.

CHOOSE: #1 ADD (RETURN)

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR or CONSTANT
P34	2 (Char)	1	1	3	1
P35	4 (RJ)	2	63	5	2 decimals
P36	1 (Con)	2	70	2 (Free)	-
P37	4 (RJ)	2	71	9	2 decimals

(RETURN) to PRINT LOCATIONS MENU.

Subtotals Print Positions

In this section you will:

- move the heading for amount due and subtotal for amount due to new locations
- calculate subtotals for the deductions and provide a print position
- add a heading for deduction
- add a print position for the deduction subtotal
- add a heading for net due
- add a print position for the net due subtotal.

CHOOSE: #3 SUBTOTALS (RETURN)
#2 PRINT POSITIONS (RETURN)
#2 EDIT (RETURN)

Edit P20. Change the column to 20.

Edit P21. Change the column to 31.

Print positions 38-41 will now be added to the format.

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR or CONSTANT
P38	1 (Con)	2	42	2 (Free)	DEDUCTIONS
P39	4 (RJ)	2	53	8	2 decimals
P40	1 (Con)	2	63	2 (Free)	NET DUE
P41	4 (RJ)	2	71	9	2 decimals

(RETURN) to SUBTOTALS MENU.

In order to make proper use of some print positions that will be added to Bottom of page, the records should be sorted on field #1, COMPANY NAME. The Subtotal Break Field needs to be changed to reflect this.

CHOOSE: #4 SUBTOTAL BREAK FIELD (RETURN)

TYPE: 1 (RETURN)

(RETURN) to PRINT LOCATIONS MENU.

Totals Print Positions

In the Totals section you are going to:

- move the heading for amount due and the amount due total.
- get totals for the deductions and provide a print position.

Print positions 42-45 will be added and produce the following results.

- heading for deduction.
- print position for total of deductions.
- heading for net due.
- print position for total net due.

CHOOSE: #4 TOTALS (RETURN)
 #2 PRINT POSITIONS (RETURN)
 #2 EDIT (RETURN)

Edit P25. Change the column to 20.

Edit P26. Change the column to 31.

Add the following print positions 42-45.

NAME	DESC.	LINE	COLUMN	LENGTH	CONSTANT
P42	1 (Con)	2	42	2 (Free)	DEDUCTIONS
P43	4 (RJ)	2	53	8	2 decimals
P44	1 (Con)	2	63	2 (Free)	NET DUE
P45	4 (RJ)	2	71	9	2 decimals

(RETURN) to the PRINT LOCATIONS MENU.

Bottom of Page Print Positions

You are going to add four print positions in Bottom of page, so that it prints from ____ to ____ information. This information tells you what range of records you have on a page, i.e., from 02/03/83 to 03/10/83.

CHOOSE: #5 BOTTOM OF PAGE (RETURN)
 #2 PRINT POSITIONS (RETURN)
 #1 ADD (RETURN)

Print positions 46-49 will provide the following results:

- the heading "FROM"
- a print position for the date of the first record on the page.
- the heading "TO"
- a print position for the date of the last record on the page.

Add the following print positions 46-49.

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR or CONSTANT
P46	1 (Con)	2	1	2 (Free)	FROM
P47	2 (Char)	2	6	8	1
P48	2 (Con)	2	15	2 (Free)	TO
P49	2 (Char)	2	18	8	1

(RETURN) to FORMAT GENERATOR MENU to print the format.

CHOOSE: #3 PRINT and print EXAMPLE 3 format so that you have it in front of you for Assignment & Math.

EXAMPLE 3 ASSIGNMENT AND MATH

Now that all of the print positions have been created, data must be assigned to them. Commands will be given to perform calculations on certain fields and they too will be assigned to print positions.

CHOOSE: #2 EDIT
 #3 ASSIGNMENT & MATH

Top of Form Assignment & Math

This is where you **MOVE** the "FROM" information to the Bottom of page.

When the program processes a format, it reads in the first record and then executes **Top of form**. Since Top of form is only executed each time a new page is printed, the command will only be given once per page. Since in the **Bottom of page** section you need to place the date due for the *first* record processed for the page, you must **MOVE** the data while the first record is in memory, i.e., while processing Top of form.

CHOOSE: #1 TOP OF FORM

You may simply give the command:

STEP	COMMAND LINE	RESULT
1	MOVE F9 TO P47	Move the date from first record to the print pos. in Bot. of pg.

(RETURN) to Assignment & Math MENU.

Record Assignment & Math

In this section you must add the following:

- Move the record number into the print position.
- Move the deduction percentage field into a print position.
- Calculate a deduction by multiplying the amount due field (#8) by the deduction percentage field (#11).
- Calculate a deductions subtotal tally by SUMming to a Register.

CHOOSE: #2 RECORD

The commands are added to commands from example 2.

TYPE: (CONTROL-E) to go to end of list.

STEP	COMMAND LINE	RESULT
10	RECORD# TO P34	Automatically print each rec. #.
11	MOVE F11 TO P35	Print deduction % print pos. 34.

To perform arithmetic calculations in Custom Output you use REVERSE POLISH NOTATION (RPN) to operate on the numbers within the stack-registers. RPN is an alternate method of describing math operations than the algebraic method you are familiar with. An example of algebraic notation is $1 + 2 =$, the RPN equivalent is $1\ 2\ +$. In RPN, the numbers are given first, then the operation to be performed. Since the commands within Custom Output execute in a step by step manner, RPN notation allows values and results to be printed or stored anywhere within the formula to be resolved.

To implement RPN within Custom Output, a **stack** of four registers is used to hold values to be operated upon. These four **stack-registers** are named and ordered **X, Y, Z, and T**. Numbers enter and exit the stack through the **X stack-register**. It is called a *stack* because in operation it resembles a stack of plates or paper cups in a dispenser. As a number enters the X stack-register, the contents of the other stack-registers are bumped up. The same as a paper cup inserted into the bottom of a dispenser, moves up the other cups already in the dispenser. There are some major differences between the Custom Output stack and a stack of cups. One, a dispenser of cups can become empty, but the stack-registers always have some value within each register. Two, a cup dispenser can become full, but the numeric stack just "loses" old numbers off the top as new numbers are introduced to the bottom of the stack. If a number were MOVED to X, the old contents of the X stack-register is moved to the Y stack-register, the contents of the Y stack-register is moved to Z, and Z is moved to T. The old contents of the T stack-register is lost.

T	Z	Y	X
4	5	3	2

Stack-registers with some numbers.

4 lost ← 5 ← 3 ← 2 ← 6 ← Value 6 moved to X stack-register.

When a math operation such as + is executed, it adds the contents of the X stack-register to the Y stack-register and combines them into an answer in the X stack-register. The contents of the Z stack-register is copied to the Y stack-register, T is copied into Z.

T	Z	Y	X	
5	3	2	6	Initial stack condition.
5 →	5 →	3	8	+ executed. Y+X=2+6.

Since new values push older values off the stack, you do not need to be concerned about the contents of the stack before you start to move numbers to the stack to do math operations upon them. As you will see, the older contents of the stack-registers can be used to hold intermediate results of long formulas. Reverse Polish Notation allows complex formulas to be described without the use of parentheses. For example, $(3+4)*(8-6)=$ would be described as $3\ 4\ +\ 8\ 6\ -\ *$.

T	Z	Y	X	
-	-	-	3	Move 3 to X. "-" denote old values in stack that have nothing to do with this calculation.
-	-	3	4	Move 4 to X
-	-	-	7	+ to yield (3+4)
-	-	7	8	Move 8 to X, note 7 "floating" in the stack.
-	7	8	6	Move 6 to X
-	-	7	2	- to give (8-6)
-	-	-	14	* for 7*2

For this example you must multiply the percentage amount in the deduction field by the amount in the Amount Due field.

1. MOVE first number of calculation into X stack-register.
2. MOVE second number of calculation into X stack register. When you do this, the first number in X stack-register moves into Y stack-register.
3. Enter operation to be performed, i.e., + - * /.

The program will add second number to first number, or subtract second number from first number etc. The result will be stored in X stack-register.

HINT: Regardless of the other commands given in Assignment & Math, the number residing in X stack-register will remain there until another number is moved into X. The number can be

MOVED into a field, a print location, a user field, or a constant, yet it still remains in X stack-register.

IMPORTANT: When you subtract or divide, it is very important to load numbers into stack in correct order.

For this example, you will be multiplying contents of field #11 (deduction) by amount due giving you the actual deduction amount. You will then move the deduction amount to print position 37.

You must also keep a running tally of the deduction to get deduction subtotal for Subtotal section. (see example 2) This subtotal will be SUMmed to Register 3.

STEP	COMMAND LINE	RESULT
12	MOVE F11 TO X	Move deduction % into X stack-register.
13	MOVE F8 TO X	Move amount due into X stack-register. <i>Field 11 now moves into Y stack-reg.</i>
14	*	Multiply F11 times F8.
15	MOVE X TO P37	Print result in X stack which is ded amt.
16	SUM R3	Tally ded amt subtotal and store in reg. 3.

TYPE: (CONTROL-Q) to quit.

Subtotal Assignment & Math

You will use Subtotal section to:

- MOVE contents of storage-register 3 to print position 39.
- keep a running tally of deduction subtotals for Total section (see example 2)
- perform a calculation to obtain the NET DUE subtotal. NET DUE = AMOUNT DUE - DEDUCTIONS. This can be done by subtracting subtotals in their print positions.

- move the net due subtotal result from X stack-register to print position 41.
- keep a running tally of net due subtotals for Totals section.

Once again these operations, like all math operations are performed in the stack.

CHOOSE: #3 SUBTOTALS

TYPE: (CONTROL-E) to move to end of list.

STEP	COMMAND LINE	RESULT
5	MOVE R3 TO P39	Print ded subtotal at print pos. 39
6	MOVE R3 TO X	Move ded subtotal to X stack-reg. to make ready for SUMming to ded total reg.
7	SUM R4	Tally ded total and store in reg. 4.
8	CLR R3	Clear reg. 3 after subtotals break to set reg. 3 to zero.
9	MOVE P21 TO X	Move amt due subtotal to X stack-reg. to make ready for subtraction.
10	MOVE P39 TO X	Move ded subtotal to X stack-reg. to make ready to subtract from amt due subtotal. <i>Amt due subtotal moves to Y stack-reg.</i>
11	-	Subtract operation to obtain net due subtotal.
12	MOVE X TO P41	Print net due subtotal at print pos. 41.

TYPE: (CONTROL-Q) to quit.

Totals Assignment & Math

In this section you will:

- MOVE deduction total being stored in register 4 to print position 43.
- calculate net due total by subtracting deductions total from amount due total.

CHOOSE: #4 TOTALS

TYPE: (CONTROL-E) to go to end of list.

STEP	COMMAND LINE	RESULT
2	MOVE R4 TO P43	Print ded total at print pos. 43
3	MOVE P26 TO X	Move amount due total to X stack-reg. to make ready for subtraction.
4	MOVE P43 TO X	Move ded total to X stack-reg. to make ready to subtract ded total from amt due total. <i>Amt due total move to Y stack-reg.</i>
5	-	Subtract operation to obtain net due total.
6	MOVE X TO P45	Print net due total at print pos. 45.

TYPE: (CONTROL-Q)

Bottom of Page Assignment & Math

You must move the "TO" information to print position 49. The "TO" information is the date of the last record printed on the page.

The last record on the page is in memory when Bottom of page is executed, therefore the date field will be moved into print position 49 in Bottom of page Assignment & Math.

CHOOSE: #5 BOTTOM OF PAGE

STEP	COMMAND LINE	RESULT
2	MOVE F9 TO P49	Print due date from last record on page at print pos. 49.

TYPE: (CONTROL-Q) to quit.

(RETURN) to **FORMAT GENERATOR MENU** and make a printout of the new format.

HINT: In order for the calculations on field #11 deductions % to be correct, make sure that you have a decimal equivalent of a percentage amount in the deduction field (#11). If you need to add this data, use the Update routine and edit field #11.

EXAMPLE 4

This example shows further editing capabilities and continues to exhibit the power that Custom Output Editor affords you for designing reports. The example continues with the Example 3 Format.

The sample report includes the following characteristics:

- Use a clock card via **TIME** command to print mm/dd hh:mm (month, day, hour and minutes) at top of report. You can still use this example to print date and time at the top of your report even if you do not have a time clock on your computer.
- Set up **print position on line 0** to manipulate data.
- Calculate average amount due subtotals and total, average deductions subtotals and total, and average net due subtotals and total.
- Enter and employ **USER FIELDS**.

The picture of the print chart layout shows the numbers for print positions that are added or edited.

FORMAT NAME ACCOUNTS PAYABLE CHECKS

EXAMPLE 4

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
REC	COMPANY	PHONE NUMBER	DESCRIPTION	AMOUNT DUE	DEDUCTIONS	NET DUE	AMT DUE	DED AMT	999999.99	999999.99	999999.99	999999.99	999999.99	999999.99	999999.99	999999.99	999999.99	999999.99	999999.99	999999.99	999999.99	999999.99	999999.99
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24

PRINTER INFORMATION

Check Printer Information option #8 to ensure that the correct slot has been entered. See Printer Information in example 1.

Top of Form Print Positions

The Top of Form section includes the following characteristics:

- Add print positions on line 0 which do not get printed. Line 0 is used for temporary storage permitting you to manipulate data contained within a field.

NOTE: Line zero is being used simply to demonstrate how to manipulate data. The clock card is being used for the sake of this example. It is not "necessary" to manipulate clock card data when you wish to print the time on your report. You could simply designate a print position and add the command "TIME" directly into that print position.

- Manipulate data from the clock. Standard clock information is formatted as follows:

mm/dd hh:mm:ss.mmm

The above format will be manipulated so that month and day are printed at top left corner of page, and hours and minutes at top right corner of page.

- Add print position 53 where month and day will be located and print position 54 where hour and minutes will be located.

Coordinates have been taken from above print chart example 4.

CHOOSE: #2 EDIT Example 3 format
#2 PRINT LOCATIONS
#1 TOP OF FORM
#2 PRINT POSITIONS
#1 ADD

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR or CONSTANT
P50	2 (Char)	0	not asked	2	8
P51	1 (Con)	0	not asked	2 (Free)	:
P52	2 (Char)	0	not asked	2	11
P53	2 (Char)	1	1	5	1
P54	2 (Char)	1	75	5	1

(RETURN) to PRINT LOCATIONS MENU.

Record Print Positions

You do not have to edit or add to Record section Print Locations.

Subtotals Print Positions

The Subtotals section includes the following characteristics:

- Change length of section to 4 lines.
- Add print position to contain tally for subtotalling number of bills.
- Add heading for number of bills.
- Add heading for average subtotals for amount due, deductions, and net due.

CHOOSE: #3 SUBTOTALS
#1 LENGTH OF SECTION

TYPE: 4

CHOOSE: #2 PRINT POSITIONS
#2 EDIT

Edit P22. Change line to 4.

(RETURN) to PRINT POSITIONS MENU

CHOOSE: #1 ADD

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR or CONSTANT
P55	2 (Char)	3	1	4	1
P56	1 (Con)	3	5	2 (Free)	BILLS
P57	1 (Con)	3	13	2 (Free)	AVERAGE
P58	4 (RJ)	3	21	9	2 decimals
P59	4 (RJ)	3	43	8	2 decimals
P60	4 (RJ)	3	62	9	2 decimals

(RETURN) to PRINT LOCATIONS MENU.

Totals Print Positions

Headings and print positions are also set up in Totals section for average of bills, deductions and net due. This is done in exactly the same manner as subtotals.

CHOOSE: #4 TOTALS
#1 LENGTH OF SECTION

TYPE: 4

CHOOSE: #2 PRINT POSITIONS
#2 EDIT

Edit P27. Change line to 4.

(RETURN) to PRINT POSITIONS MENU

CHOOSE: #1 ADD

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR or CONSTANT
P61	2 (Char)	3	1	4	1
P62	1 (Con)	3	6	2 (Free)	BILLS
P63	1 (Con)	3	13	2 (Free)	AVERAGE
P64	4 (RJ)	3	21	9	2 decimals
P65	4 (RJ)	3	43	8	2 decimals
P66	4 (RJ)	3	62	9	2 decimals

(RETURN) to PRINT LOCATIONS MENU.

Bottom of Page Print Positions

The Bottom of page section includes the following characteristics:

- Add print positions for USER FIELD.
- Add heading "RUN BY" to identify person generating report.
- Add print position for initials of person generating report.

CHOOSE: #5 BOTTOM OF PAGE
#2 PRINT POSITIONS
#1 ADD

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR or CONSTANT
P67	2 (Char)	2	28	30	1
P68	1 (Con)	2	60	2 (Free)	RUN BY:
P69	2 (Char)	2	67	3	1

(RETURN) to FORMAT GENERATOR MENU to print the Print Locations.

Top of Form Assignment & Math

The Assignment & Math Top of form section includes the following characteristics:

- Assign TIME to a print position that has been designed to print month and day only.
- Assign TIME to print position, which is on line 0. This print position has been designed to temporarily store only characters 8 and 9 of time format which is hour.
- Assign TIME to print position 52, which is also on line 0. This print position has been designed to temporarily store only characters 11 and 12 of time format which are minutes.
- MOVE print position 50, hour, to print position 54 to print hour.
- APPEND print position 51, colon, to print position 54, to separate hour and minutes.
- APPEND print position 52, minutes, to print position 54 to print minutes.

CHOOSE: #2 EDIT (RETURN)
#3 ASSIGNMENT & MATH (RETURN)
#1 TOP OF FORM (RETURN)

TYPE: (CONTROL-E) to go to end of list.

STEP	COMMAND LINE	RESULT
3	TIME TO P53	Print month/day at print pos. 53
4	TIME TO P50	Temporarily store hour at print pos. 50. (line 0)
5	TIME TO P52	Temporarily store minutes at print pos. 52
6	MOVE P50 TO P54	Print hour at print pos. 54.
7	APPEND P51 TO P54	Print colon after hour.
8	APPEND P52 TO P5	Print minutes after colon.

TYPE: (CONTROL-Q) to quit.

Record Assignment & Math

Assignment & Math for Record section includes the following characteristics:

- Calculate subtotal tally of number of records, i.e., bills processed, before due date changes, i.e., field breaks, by **INC**re-menting to register 5. This subtotal tally will be used to average the amount due, deductions, and net due in Subtotals section.
- Calculate total tally of number of records, i.e., bills processed in this report by **INC**re-menting to register 6. This tally will be used to average the amount due, deductions and net due in Totals section.

CHOOSE: #2 RECORD

TYPE: (CONTROL-E) to go to end of list.

STEP	COMMAND LINE	RESULT
17	INC R5	Count number of records processed before due date changes.
18	INC R6	Count number of records processed in report.

TYPE: (CONTROL-Q) to quit.

Subtotals Assignment & Math

Assignment & Math for Subtotals section includes the following characteristics:

- Move tally of subtotal tally in register 5 to print position 55.
- Perform calculation to obtain average amount due subtotal. (Amount due subtotal / bills subtotal = average amount due subtotal)
- Perform calculation to obtain average deduction subtotal. (Deductions subtotal / bills subtotal = average deductions subtotal)
- Perform a calculation to obtain average net due subtotal. (Average net due subtotal / bills subtotal = average net due subtotal)
- **CLR** (clear) register 5 to set to 0 after break field changes.

CHOOSE: #3 SUBTOTALS

TYPE: (CONTROL-E) to go to end of list.

STEP	COMMAND LINE	RESULT
13	MOVE R5 TO P55	Print bills subtotal at print pos. 55.
14	MOVE P21 TO X	Move amt due subtotal to X stack-reg. to prepare for division.
15	MOVE R5 TO X	Move bills subtotal to X stack-reg. to prepare to divide into amt due subtotal which is now in Y stack-reg.
16	/	Calculates average amt due subtotal.
17	MOVE X TO P58	Print amt due at print pos. 58.
18	MOVE P39 TO X	Move ded subtotal to X stack-reg. to ready for division.

STEP	COMMAND LINE	RESULT
19	MOVE R5 TO X	Move bills subtotal to X stack-reg. to prepare for division.
20	/	Calculate average ded subtotal.
21	MOVE X TO P59	Print average ded subtotal at print pos. 59.
22	MOVE P41 TO X	Move net due subtotal to X stack-reg. to prepare for division.
23	MOVE R5 TO X	Move bills subtotal into X stack-reg. to prepare for division.
24	/	Calculate average net due subtotal.
25	MOVE X TO P60	Print average net due subtotal at print pos. 60.
26	CLR R5	Set reg. 5 to 0 after field breaks.

TYPE: (CONTROL-Q)

Totals Assignment & Math

Assignment & Math Totals section gets totals for bills and totals for averages of amount due, deduction, and net due. Calculations are the same as in Subtotals section.

CHOOSE: #4 TOTALS

TYPE: (CONTROL-E)

STEP	COMMAND LINE	RESULT
7	MOVE R6 TO P61	Print bills total at print pos. 61.
8	MOVE R2 TO X	Move amt due total to X stack-reg. prepare for division.
9	MOVE R6 TO X	Move bills total to X stack-reg. to prepare to divide into amt due total which is now in Y stack-reg.
10	/	Calculates average amt due total.
11	MOVE X TO P64	Print amt due at print pos. 64.
12	MOVE R4 TO X	Move ded total to X stack-reg. to ready for division.
13	MOVE R6 TO X	Move bills total to X stack-reg. to prepare for division.

STEP	COMMAND LINE	RESULT
14	/	Calculate average ded total.
15	MOVE X TO P65	Print average ded total at print pos. 65.
16	MOVE P45 TO X	Move net due total to X stack-reg. to prepare for division.
17	MOVE R6 TO X	Move bills total into X stack-reg. to prepare for division.
18	/	Calculate average net due total.
19	MOVE X TO P66	Print average net due total at print pos. 66.

TYPE: (CONTROL-Q)

Bottom of Page Assignment & Math

Assignment & Math for Bottom of Page section includes the following characteristics:

- **MOVE a USER FIELD** into print positions 67 and 69. A user field permits you to type anything that is unique to the report at the time it is run. The person running the report will be asked to type the content of the user field. The user field can reside in any print location section. For example, you may want to use the same format to run quarterly reports. In a case such as this you would assign a print position for user field in Top of form section. The person would enter the title, "FIRST QUARTERLY REPORT." The next time the report is run the person generating the report would enter, "SECOND QUARTERLY REPORT," etc.

In this example two user fields will be designated: a user field for comments and a user field for initials of person running report.

CHOOSE: #5 BOTTOM OF PAGE

TYPE: (CONTROL-E)

STEP	COMMAND LINE	RESULT
3	MOVE U1 TO P67	Print comments user field at print pos. 67.
4	MOVE U2 TO P69	Print user's initials at print pos. 69.

(RETURN) to EDIT FORMAT MENU.

User Prompts

User prompts must be created. These prompts appear prior to running the report. They tell the user what type of information is needed for user fields. At this time the user can enter comments that are unique to this report and his/her initials. After entries have been made, the report will be run.

You can have 10 user prompts with a maximum of 240 characters each.

User prompts are created from EDIT FORMAT MENU.

CHOOSE: #4 USER PROMPTS

```
_____FORMAT GENERATOR_____
_____EDIT FORMAT_____
_____USER PROMPTS_____

<RETURN> TO END

U1
U2
U3
U4
U5
U6
U7
U8
U9
U0

SELECT:
```

The first user prompt will reside in U1.

TYPE: 1

ENTER USER PROMPT
<CTRL-D> DELETES PROMPT
<RETURN> ONLY EXITS W/O CHANGE

U1

Lines represent length of prompt. Do not press (RETURN) at the end of line. Keep typing and cursor will drop down to next line automatically. If you do not want to split a word in the middle, press space bar until the cursor drops to next line and continue typing prompt.

Press (RETURN) when finished typing prompt.

TYPE: ENTER COMMENTS FOR ACCOUNTS PAYABLE

PRESS: SPACE BAR 5 times

TYPE: CHECKS REPORT: (RETURN)

As you can see, only the first 35 characters show up with > indicating that there is more to the prompt. To see or retype prompt, enter the corresponding number.

TYPE: 2

TYPE: ENTER YOUR INITIALS:

PRESS: (RETURN) (RETURN) to get back to the EDIT FORMAT MENU.

(RETURN) to the FORMAT GENERATOR MENU. Save the format as EXAMPLE 4. Example 3 will remain unchanged on the format disk so that you can use either one. Use List/Report to run the report.

EXAMPLE 5

PREPRINTED FORM EXAMPLE

One of the most useful aspects of Custom Output Editor routine is its ability to print information directly onto preprinted forms. The following example will illustrate this power as well as demonstrate how to write information back to the data base. Custom Output can be used to manipulate and make calculations on your

data base without ever printing *anything* unless you so desire. This aspect will be detailed in Example 6.

Using Accounts Payable Checks data base you will create an accounts payable check. There are many preprinted checks available; in the example you will be shown how to enter information directly onto such a form.

For best results, copy the check format onto print chart paper, marking each print location. You may also want to mark field numbers which correspond to each location. The following is an example of a preprinted check on print chart paper. The coordinates used in this example are taken from this diagram.

(See pages 314-315)

The sample report includes the following characteristics:

- Print information from records for a particular company on check stub. The date, description, amount, and deduction are moved into print positions. The Net Amount is then calculated by subtracting Deduction from Amount.
- Perform calculations where results are placed directly into fields of data base, rather than just being printed.
- Print a check.
- The information will be calculated in Record Assignment & Math, but the check is printed by the Bottom of Page Print Locations.

IMPORTANT: Before running checks using List/Report routine, always sort records in ascending order on Field #1 Company Name.

After first check for first company is printed, process begins again for next company.

NOTE: If there is not enough room on one check stub for all of a company's records. Two checks will have to be written to same company.

CREATE PREPRINTED CHECK FORMAT

CHOOSE: #17 OUTPUT EDITOR from the MENU SELECTION LIST.

CHOOSE: #1 CREATE from the FORMAT GENERATOR MENU.

When you see FORMAT NAME:
TYPE: PREPRINTED CHECK

PRINTER INFORMATION

CHOOSE: #1 PRINTER INFORMATION
 #4 PRINT COLUMNS = 80
 #5 LINES PER PAGE = 42

Enter appropriate information for your printer. See Mailing Label Format section.

When finished, return to CREATE FORMAT MENU.

Top of Form Print Positions

In this section you will:

- add a print position where check date is printed automatically on top of check stub. This date is entered each time program is loaded when prompted to enter a date or remark. As wanted, each time you use a Custom Output format, date will coincide with this entry.

CHOOSE: #2 PRINT LOCATIONS
 #1 TOP OF FORM
 #1 LENGTH OF SECTION

TYPE: 5

CHOOSE: #2 PRINT POSITIONS
 #1 ADD

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR or CONSTANT
P1	1 (Con)	2	34	2 (Free)	CHECK DATE:
P2	2 (Char)	2	46	8	1

Record Print Positions

In this section you will:

- add print positions where due date, description, amount, and deduction will be printed directly from data base.

- add print position where calculation for net amount will be placed.

CHOOSE: #2 RECORD
 #1 LENGTH OF SECTION

TYPE: 2

The program determines how many records to print by subtracting lengths of Top of form and Bottom of page from entire page length, and use any remaining space for record. Notice that one record uses two lines because description field is split. Therefore, length of Record section is two.

CHOOSE: #2 PRINT POSITIONS

Enter the following information for Record print positions 3-8.

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR
P3	2 (Char)	1	1	8	1
P4	2 (Char)	1	14	30	1
P5	2 (Char)	2	14	3	31
P6	4 (RJ)	1	48	10	2 decimals
P7	4 (RJ)	1	59	8	2
P8	4 (RJ)	1	70	10	2 decimals

(RETURN) to PRINT LOCATIONS MENU.

Subtotals Print Positions

In this section you will:

- instruct computer to stop printing records and begin printing a check each time Company Name changes, i.e., you simply need to inform the program of the break field. Nothing is printed in Subtotals section.

Doing this is very simple; you just designate field #1, Company Name, as *break field*. The program then "knows" that whenever data in this field changes, it will try to execute other Subtotals commands, since there are none in this example, it must stop printing records and then initiate Bottom of page section. Bottom of page will be processed immediately.

CHOOSE: #3 SUBTOTALS
 #4 SUBTOTAL BREAK FIELD

SUBTOTAL BREAK NOT SELECTED
BREAK ON FOO

The break is on field #1 Company:

TYPE: 1

The New Page Control, option #3, must be used to have a new check begun after a break. See NEW PAGE CONTROL section at end of this example.

CHOOSE: #3 NEW PAGE CONTROL from SUBTOTALS MENU.

NEW PAGE BEFORE PRINTING: NO
NEW PAGE AFTER PRINTING: NO

NEW PAGE BEFORE PRINTING? (Y/N):

TYPE: N

NEW PAGE AFTER PRINTING? (Y/N):

TYPE: Y

Totals section is not needed in present example so you go directly to Bottom of page section.

Bottom of Page Print Positions

In this section you will:

- add print positions on check for company name, address, amount of check, and date that you entered at beginning of program.

CHOOSE: #5 BOTTOM OF PAGE
#1 LENGTH OF SECTION

TYPE: 26

CHOOSE: #2 PRINT POSITIONS

Add print positions 9-16.

NAME	DESC.	LINE	COLUMN	LENGTH	START CHAR or CONSTANT
P9	1 (Con)	2	67	2 (Free)	TOTAL
P10	4 (RJ)	3	69	11	2 decimals
P11	2 (Char)	16	13	25	1
P12	2 (Char)	16	39	8	1
P13	2 (Char)	16	66	11	2 decimals
P14	1 (Con)	16	65	2 (Free)	\$
P15	2 (Char)	17	13	30	1
P16	2 (Char)	18	13	29	1

Top of Form Assignment & Math

In this section:

- The date is printed at print position 1.

The date/remark entered at the startup of the Data Factory is stored in a DATE file. This data, like field data, is considered a character entry and can be assigned to a print position via the **DATE** command.

STEP	COMMAND LINE	RESULT
1	DATE TO P2	Print date at print pos. 2.

Record Assignment & Math

In this section you will:

- print date, description, and amount directly from data base.
- calculate Deduction Amount by multiplying deduction percentage by amount due.
- calculate Net Amount Due by subtracting Deduction Amount from Amount Due
- calculate Amount to Date for each record by adding Payment field data to data presently in Amount to Date field.
- calculate Total Payment Amount to be printed on check.
- calculate Balance by subtracting Payment from Net Amount Due.
- move Balance to field #13 and it will be written to data base. The Balance does not appear on check.

- move date check was printed to field #14 and it will be written to data base.
- move check number that coincides with records for each Company Name to field #15. It will then be written to data base. The check number will be placed in user field #1 and will not be printed on check, since check number is part of preprinted form.
- use the **SWAP** command to position values within the stack properly.

For example, there may be several invoices from a company, but only one check need be written. The Total Payment Amount will be calculated and printed on check. Later if you want to see the number of a check written to a particular company you can use Inspect/Change or List/Report and display it on screen.

STEP	COMMAND LINE	RESULT
1	MOVE F9 TO P3	Print Due Date at print pos. 3.
2	MOVE F7 TO P4	Print characters 1-30 of Desc.
3	MOVE F7 TO P5	Print characters 31-60 of Desc.
4	MOVE F8 TO P6	Print Amt Due at print pos. 6.
5	MOVE F8 TO X	Prepare Amt Due to multiply by Ded. Percentage.
6	MOVE F11 TO X	Prepare Ded. Percentage for multiplication. <i>Amt Due moves to Y reg.</i>
7	*	Multiply Amt Due by Ded. percentage.
8	MOVE F8 TO X	Prepare Amt Due for subtraction. <i>Ded Amt moves to Y reg.</i>
9	SWAP	Invert content of X & Y stack-reg. to prepare for subtraction in correct order.
10	-	Subtract Ded Amt from Amt Due to receive Net Amt Due.
11	MOVE X TO P8	Print Net Amt Due at print pos. 8.
12	MOVE F10 TO X	Prepare Payment Amt for subtraction. <i>Net Amt Due moves into Y stack-reg.</i>
13	-	Subtract to receive Balance Amt.

STEP	COMMAND LINE	RESULT
14	MOVE X TO F13	Write Balance Amt. to field #13 of data base.
15	MOVE F10 TO X	Prepare to tally Payment field.
16	SUM R1	Tally check amt and store in register 1.
17	MOVE P2 TO F14	Write today's date in field #14 of data base.
18	MOVE U1 TO F15	Write check number to field #15 of data base.

TYPE: (CONTROL-Q)

Subtotals Assignment & Math

For the present example, there are no Assignment and Math instructions in Subtotals routine. Therefore, after a break occurs in field 1 Company Name, Bottom of page section is processed. So even though there are no print positions and no assignment and math commands, the New Page after Subtotals forces the execution of Bottom of Page.

Bottom of Page Assignment & Math

The Bottom of page section will execute when there is no more room to print additional records on check stub or when a change occurs in break field. If there are more records with same company name, additional checks will be printed until company name changes.

In this section you will:

- print Total Payment from tally of payments on check stub.
- print Company Name and Address on check.
- learn how to enter a number constant to X stack-register for mathematical calculations.
- print today's date on check.
- print check amount from tally of payments on check.
- clear payments tally register to set to zero to prepare to tally payments for next company.

- add a constant of 1 to check number user field to increment check number for next company.

NOTE: When using a constant in Assignment and Math, simply type the number as a command. The constant will appear within quotation marks and will automatically move into X stack-register.

NOTE: When Bottom of page is processed, record which was last written will be in memory. The above information will be from current record in memory.

STEP	COMMAND LINE	RESULT
1	MOVE R1 TO P10	Print Total Payments at print pos. 10 on check stub.
2	MOVE F1 TO P11	Print Company's Name at print pos. 11 on ck.
3	MOVE P2 TO P12	Print today's date at print pos. 12 on ck.
4	MOVE R1 TO P13	Print ck. amt. at print pos. 13 on ck.
5	MOVE F2 TO P15	Print Street at print pos. 15 on ck.
6	MOVE F3 TO P16	Print City at print pos. 16 on ck.
7	APPEND C " " TO P16	Add a space between City and State. (Press space bar once and type " for constant).
8	APPEND F4 TO P16	Print State/Zip at print pos. 16 next to City.
9	CLR R1	Set register 1 to zero.
10	MOVE U1 TO X	Prepare ck. # in user field 1 for addition.
11	1	Automatically put 1 in X stack-register.
12	+	Add constant 1 to Check Number.
13	MOVE X TO U1	Move incremented ck # back into user field #1 for next company's check.

TYPE: (CONTROL-Q)

(RETURN) to EDIT FORMAT MENU.

After processing an entire check, program will see if there are any other records to be processed. The routine will begin again until all records have been processed.

USER PROMPTS

A user prompt will be created so that the person running checks can type beginning check number. The preprinted number on check will then correspond to check number in user field #1.

CHOOSE: #4 USER PROMPTS from EDIT FORMAT MENU.

TYPE: 1

TYPE: ENTER THE BEGINNING CHECK NUMBER:

(RETURN) to FORMAT GENERATOR MENU.

Choose to print the format for future reference.

IMPORTANT - You must enter data into Payment field #10 before generating this report using Custom Output option in List/Report. The Update routine can be used for this purpose.

The Amount Due will be greater than Payment amount if an entire bill is not paid therefore, there will be a balance. When this is the case, Balance field will contain amount still owed to that company. Therefore, a new record will have to be created for outstanding amount.

If you intend to use the sample format or a similar format to pay your bills, example six will illustrate how to create a format to make those records that contain an amount in Balance field ready for use by the example five format again.

NEW PAGE CONTROL

Depending upon desired output, you may want to force a page break at different places in the format.

IMPORTANT: Every time the program anticipates a page break, whether due to lack of room or a forced page, it executes Bottom of page and then begins next page by executing Top of form.

New Page After Printing Records - Option #3 on Record menu allows you to have a new page printed for each record. When you choose this option Top of form, one record, Subtotals and Totals (optional), and Bottom of page will be printed on each page.

New Page Before Printing Subtotals - When a break field occurs, Bottom of page is performed, paper advances to next sheet, Top of form is executed, and then the next set of records is printed.

New Page After Printing Subtotals - When a break field occurs, Subtotals will be performed first and then Bottom of page will be executed. The page will advance, Top of form will be performed and next set of records will be printed. (This option is used in accounts payable example.)

New Page Before AND After Printing Subtotals - When a break field occurs, Bottom of page is processed page is advanced, Top of form, Subtotals and Bottom of page is executed, page is advanced again and Top of form and next set of records is printed.

New Page Before Printing Totals - After all records have been printed, Bottom of page is processed and then page is advanced. Top of form is processed and then Totals are printed, followed by Bottom of page section.

EXAMPLE 6

After running checks for ACCOUNTS PAYABLE CHECKS file using example 5, it is necessary to create separate records for those that contain an amount in Balance field. By creating new records you will retain records of payments with their respective check numbers for your reports.

Example 6 will serve three purposes: 1) avoid double payment by making new records, 2) provide a new check number for next payment, and 3) produce records that coincide with example 5 to pay outstanding bills.

In this example you will:

- Construct a filter in Master Search routine to get a Survivor List of those records which contain an amount in Balance field.
- Do a Straight Transfer in Reconfigure routine to create new records. After fields have been manipulated so that they are ready to be used with the format that writes checks, records will be combined with original data base file.

You always need a blank disk when using Straight Transfer option.

- Use Output Editor to move balance into Amount due field to replace *old* amount due, and then enter "NULLS" (nothing) into Balance, Payment, Check date, and Check number fields.

- Use List/Report routine to process records.

After records are processed, you have two options: 1) keep unpaid bills in new Accounts Payable file as you would a separate file folder, or 2) append new records to original file. Both methods will be discussed after records are processed.

PROCEDURE

To use this example, the Report disk should be in drive #1 and sample ACCOUNTS PAYABLE CHECKS file should be in drive #2.

1. CHOOSE: #14 Master Search and construct a filter for all records which have an amount greater than zero in Balance field. The same format disk can be used for this format as the Output Editor and all other formats. A Survivor List of those records is created and used in Reconfigure.

COMPARISON OPERATOR: FIELD greater than CONSTANT
COMPARISON TYPE: NUMERIC
PRIMARY FIELD: #13 Balance
COMPARE CONSTANT: 0 (zero not oh)
COMPARISON: END OF FILTER
FILTER NAME: BALANCE DUE
SAVE FILTER
PROCESS DATA BASE
RETURN TO MENU SELECTION LIST

2. CHOOSE: #7 Reconfigure from the MENU SELECTION LIST and do a Straight Transfer. The new file can be named ACCOUNTS PAYABLE or any name different from ACCOUNTS PAYABLE CHECKS. You do not add any empty fields to this file. In this example, 25 is suitable for length of longest field you will sort. Choose Survivor List option for record transfer. **Follow disk swapping prompts carefully.** Use *new* file to continue when prompted.
3. CHOOSE: #17 Output Editor to create a new format that is used with new ACCOUNTS PAYABLE file created by Straight Transfer. Name the format ACCOUNTS PAYABLE or any name different from other format names.

HINT: If you want to see other format names to avoid duplication and thus overriding one of them, choose Edit on the FORMAT GENERATOR MENU. Load one of the formats and then return to the FORMAT GENERATOR MENU to create the new format.

It is not necessary to enter printer information or printer locations for this format since the format is only being created to manipulate records in your file. The ACCOUNTS PAYABLE CHECKS format that was created in example 5 is still used to print checks.

CHOOSE: #3 Assignment & Math
#2 Record

STEP	COMMAND LINE	RESULT
1	MOVE F13 TO F8	Move amount still owed to a company from Balance field to field #8 Amt Due
2	MOVE C " " TO F10	Enter null as constant into Payment field. (Select constant, press SPACE bar once to enter null.)
3	MOVE F10 TO F13	Enter a null in Amt Due field.
4	MOVE F10 TO F14	Enter a null in Check Date field.
5	MOVE F10 TO F15	Enter a null in Check # field.

(RETURN) to the FORMAT GENERATOR MENU.

Save the format under Balance Due name or any name different from other formats on disk.

(RETURN) to the MENU SELECTION LIST.

Process records with List/Report routine, Micro Lab's Custom Output. The format that you created in this example is used to process records.

After records are processed checks can be printed using the format that was created in example 5.

Depending on how you wish to keep records, new records can remain on the new file or they can be added to the original file. This also depends on how many records there is room for in the original file. If you keep files separate, you could use the intervals upon which checks are printed as file names. For example, you could have January Payables, February Payables, etc.

The following procedure is used only if you want to attach new records onto the original file.

Use Reconfigure and Append to an Existing File.

Use Update to enter the amount that is going to be paid to a company in the Payment field.

Use Master Search and Construct a filter to create a Survivor List for bills that have an amount in Amt Due field and nothing in Check # field. This filter is to satisfy two conditions. 1) Field greater than Constant 0 AND 2) null in check # field.

Use example 5 format to write checks.

OUTPUT EDITOR SUMMARY

Custom Output is a routine that offers extreme power and flexibility for manipulating the data base and generating printouts. When used with the Master Search routine, one has the ability to design a format to be used with a certain set of records.

It is helpful to use the Output Editor for Custom Output Flow Chart to assist in finding appropriate Menus.

Basic steps to follow in creating a format with the Output Editor:

- Design report on print chart paper (See Examples 1-5)

- Enter Printer Information (See Example 1)
- Enter Print Positions for each section of the report
- Print out format
- Plan out Assignment & Math directions
- Use Assignment & Math commands to instruct the computer to perform mathematical operations on data and/or print data.

Top of Form Print Location

This section prints only at the top of each page of the report. In general, it serves as a place to put titles, headings and other information concerning the data printed below.

The length of section given for Top of form determines the number of lines used before the next section (often Record) prints. If a length of section is set, but no print positions are assigned, there will simply be blank lines or a margin at the top of the page.

Often Top of form contains a majority of "Constant" print positions that act as titles and headings. Other information frequently found in this section would include the date of the report (DATE command), the time of printing (TIME), the page number (PAGE#), a user field for information unique to today's report (MOVE U#), or a field of data from the first record on the page (MOVE F#).

Assignment & Math for Top of form operates with the first record of the page in memory. The commands given in Top of form can move information from the first record into print positions in other sections of the report.

Record Print Location

This section prints information from each record being processed for the report. A print position added to Record section will be used for each record printed.

The length of section given for the Record section determines the number of lines each record will use. For example, if length of section is set at two, each record printed on the page will take up

two lines. A blank line between records can be arranged by placing no print positions on the last line of the Record section.

Custom Output is always "looking ahead" to check for changes in break fields. The program checks to see if another record will fit on the page. When the program finds that a complete record will not fit, bottom of page section is processed with the information of the last record processed in memory.

Assignment & Math for the Record section is often used to perform mathematical operations on data in certain fields in addition to moving fields straight to print positions. Since the Record section is the only part of the report where each record is read into memory, the subtotals and totals tallies must be added (SUMmed) and stored in registers in this section. The subtotal and total registers are printed in their respective sections.

Custom Output Editor provides you with numerous Math operations that are performed on data using the Stack system (see explanation in Example 3). Math functions can be used on a number in the X stack register (examples, ABSolute value, TANgent, SQuaRe root, etc.) or between the numbers in the X and Y stack registers (examples, +, -, /, *, SWAP, Y^X , etc.) Results are usually MOVED into a print position or field.

In many applications the Record section will contain the majority of the report's Assignment & Math commands. This section will also frequently take up the most room on the printed report since it is printed once for each record. However, there are applications in which only a Subtotals or Bottom of page section will be printed and the Record section will only be used for Math. A further possibility is a format that would never print out, but it would be used to calculate math and store the results back to fields.

Subtotals Print Location

This section can be used to print groups of data together based on the entry of one field. For example, if records are sorted by the State field before processing a format, a different page of the report could be printed for each state.

The Output Editor must be told in the Subtotals section on what field the grouping depends. This field is called the Break Field. When a Break Field has been assigned, during the execution of the Record section the computer will always be "looking ahead" to the break field entry of the next record. If it sees an entry that differs from the previous record (for example Indiana instead of Illinois) it will automatically execute the commands given in the Assignment & Math for Subtotals.

As the name of this section indicates, an ideal use of the Break Field capabilities is to print subtotals for a group of records (example, a sales subtotal for Illinois). The Record section can be used to SUM to a register. The Subtotals section must be given print locations for printing the subtotal registers and any constants for comments or headings. At the end of Subtotals Assignment & Math the subtotal registers must be cleared.

The Subtotals section does not have to be given a length of section in order to be useful. It can be used simply as a means of causing the report to start a new page after printing a series of records with a common entry in the Break Field.

Another variation available is to use the Subtotals section to print a dashed line between groupings of records. This can be done by creating a Constant print position in Subtotals that is a row of dashes. Or, by setting a length of section but not assigning print positions; blank space will appear between groups of records.

Totals Print Location

This section prints only once per report. It is not printed until all records have been processed. Its most common use is for printing totals from all of the records at the end of the report. The registers that contain the totals are SUMmed in the Record section and printed in the Totals section.

The Totals section is not used exclusively for printing the totals of the records. As with Subtotals, the Totals section may be used to print only a dashed line or perhaps a special ending comment.

Bottom of Page Print Location

As implied by the name, this section prints at the end of each page of the report. In general, it serves as a place to print footnotes, a dashed line, or just blank space at the bottom of the page.

As mentioned in the Top of form review, print positions added to Bottom of page can have fields assigned to them through Top of form. Any fields moved to print positions through Bottom of page Assignment & Math will be from the last record processed. Commands frequently used in this section include DATE, TIME, PAGE#, MOVE U#, MOVE F#.

While most applications will print only a few lines of constants or a page number, there are times when this section will print most of the report. Example 5 is an excellent demonstration of this type of application.

MATH FUNCTIONS FOR ASSIGNMENT AND MATH

- + Addition. Adds content of X register to Y register, leaving result in X register. Register Z is copied to register Y and register T to register Z.
- Subtraction. Subtracts the contents of the X register from the contents of the Y register, leaving the result in the X register. Register Z is copied to register Y and register T is copied to register Z.
- * Multiplication. Multiplies the content of the Y register by the content of the X register, leaving the result in the X register. Register Z is copied to register Y and register T is copied to register Z.
- / Division. Divides the number in the Y register by the number in the X register, leaving the result in the X register. Register Z is copied to the Y register and the T register is copied to the Z register.

- CHS** Change sign. Changes the sign of the value in the X register to the negative of the previous value. For example, if X contained 45, the CHS operation would leave -45 in the X register and vice versa. No other registers are affected by this operation.
- Y[^]X** Raise to the power. This operation raises the value in the Y register to the power of the value in the X register, leaving the result in the X register. Register Z is copied to the Y register and the T register is copied to the Z register. For example, if the Y register contained 2 and the X register contained 16, the result would be 65536 in the X register.
- SIN** Sine function. This function returns the trigonometric Sine from the value in radians in the X register. No other registers are affected by this operation.
- COS** Cosine function. This function returns the trigonometric Cosine of the value in radians in the X register. No other registers are affected by this operation.
- TAN** Tangent function. This function returns the trigonometric Tangent of the value in the X register. No other registers are affected by this operation.
- ASN** Arc Sine function. This function returns the inverse Sine of the value in the X register. The angle returned is in the range $-\pi/2$ through $+\pi/2$ radians. No other registers are affected by this operation.
- ACS** Arc Cosine function. This function returns the inverse Cosine of the value in the X register. The angle returned is in the range $-\pi/2$ through $+\pi/2$ radians. No other registers are affected by this operation.

- ATN Arc Tangent function. This function returns the inverse Tangent of the value in the X register. The angle returned is in the range $-\pi/2$ through $+\pi/2$ radians. No other registers are affected by this operation.
- INT Integer. Returns in the X register, the integer value of the X register. No other registers are affected by this operation. For example, if X contained 123.45, then INT would return 123 in X.
- FRC Fraction. Returns in the X register, the fractional value of the contents of the X register. No other registers are affected by this operation. For example, if X contained 123.45, then FRC would return .45 in X.
- RND Random number. Returns in the X register a random number greater than or equal to 0 and less than 1. If the content of the X register is less than zero, the RND function will return the same random number each time it is used with the same negative number. If the X register contains 0 then the RND function will return the last random value generated. If the X register is greater than 0, then the RND function will return a different random number each time it is called. No other registers are affected by this operation. See the RND (aexpr) in the Applesoft programmers manual for more information.
- SGN Sign. Returns a value indicating the sign of the value in the X register. If the value in the X register is less than 0, then -1 is returned. If the X register contains 0, it is unchanged. If the X register is greater than 0, then 1 is returned. No other registers are affected by this operation. This function is valuable in doing Boolean math logic.

ABS	Absolute value. This function returns the absolute value of the number in the X register. No other registers are affected by this operation. For example, if the X register contained -45, then 45 would be returned. If the X register contained 45, then 45 would be returned.
SQR	Square Root. Returns the square root of the value in the X register. No other registers are affected by this operation.
EXP	Exponent. Raises e (2.71829) to the power in the X register, and returns the result in the X register. No other registers are affected by this operation.
LOG	Natural Logarithm. Returns the natural logarithm of the value in the X register to the X register. No other registers are affected by this operation.
1/X	Reciprocal. Returns 1 divided by the contents of the X register to the X register. No other registers are affected by this operation.
X ²	Square. Returns the square of the value in the X register to the X register. No other registers are affected by this operation.
PI	Pi. Returns the value 3.141595. . to the X register. The contents of the Z register is copied to the T register, the Y register is copied to the Z register, and X register is copied to the Y register before Pi is loaded into the X register.
RAD	Radians. Converts the value in Degrees in the X register to Radians in the X register. No other registers are affected by this operation.
DEG	Degrees. Converts the value in Radians in the X register to Degrees in the X register. No other registers are affected by this operation.

- RUP Roll Up. Roll the contents of the stack up. The X register is moved to the Y register. The Y register is moved to the Z register. The Z register is moved to the T register. And the T register is moved to the X register.
- RDN Roll Down. Rolls the contents of the stack down. The T register is moved to the Z register. The Z register is moved to the Y register. The Y register is moved to the X register. And the X register is moved to the T register.
- SWAP Swap X and Y. Swaps the contents of the X and Y registers. No other registers are affected by this operation.
- MOD Modular arithmetic. The value in the Y register is converted to a value modulus of the value of the X register. The result is returned in the X register. The Z register is copied to the Y register. And the T register is copied to the Z register.
- DUP Duplicate X. This copies the contents of the X register to the Y register. The Y register is copied to the Z register. The Z register is copied to the T register.
- NOT Logical NOT operation. If the contents of the X register is 0, then 1 is returned. If the contents is not equal to 0, then 0 is returned. No other registers are affected by this operation.

BRK

Field break. This function is used to schedule a subtotal break. Usually subtotal breaks are specified by the break field number, causing a subtotal break when the contents of a particular field changes from the previous value in the field. This function lets you schedule a subtotal break based on other fields or numeric calculations. If the content of the X register is 0, then a subtotal break will be scheduled to occur after the processing and printing of the current record. If the content of the X register is non-zero, then the value is ignored. Regardless of the value in the X register, after the BRK function, the contents of X are discarded. The contents of the Y register is moved to the X register. The Z register is copied to the Y register. And the T register is copied to the Z register.

FIX n

Fix to n decimal places. The contents of the X register is set to a value with n decimal places. For example, if X contained 12.3456 and n=2 then X would be returned as 12.35. Please note however, that if X contained 12 and n=2 then X would not print as 12.00 unless the print location format instructs it to be. This function is intended to trim the results of calculations to the number of decimal places to be stored in a record field.

Commands that affect the stack-registers

The following commands modify the contents of the stack-registers. The letters a, b, c, and d represent values initially within the X, Y, Z, and T stack-registers respectively. The position of the letters represent the stack-register the values would be in **after** the command is executed. Notation such as (F#) should be read as "the contents of field #", and SIN(a) as "the sine of a".

Stack Registers				A & M	Description of command
T	Z	Y	X	Command	
c	b	a	(F#)	MOVE F# TO X	Move field# to X
c	b	a	(R#)	MOVE R# TO X	Move register# to X
c	b	a	(P#)	MOVE P# TO X	Move Prt. Pos.# to X
c	b	a	(U#)	MOVE U# TO X#	Move User# to X
c	b	a	Con	"Constant"	Move constant to X
d	d	c	b+a	+	Addition
d	d	c	b-a	-	Subtraction
d	d	c	b*a	*	Multiplication
d	d	c	b/a	/	Division
d	c	b	-a	CHS	Change sign (negate)
d	d	c	b^a	Y^X	Y to the Xth power
d	c	b	SIN(a)	SIN	Sine(x) x=radians
d	c	b	COS(a)	COS	Cosine(x)
d	c	b	TAN(a)	TAN	Tangent(x)
d	c	b	ASN(a)	ASN	ArcSine(x)
d	c	b	ACS(a)	ACS	ArcCosine(x)
d	c	b	ATN(a)	ATN	ArcTangent(x)
d	c	b	INT(a)	INT	Integer
d	c	b	FRC(a)	FRC	Fraction
d	c	b	RND(a)	RND	Random number
d	c	b	SGN(a)	SGN	Sign
d	c	b	ABS(a)	ABS	Absolute value
d	c	b	SQR(a)	SQR	Square Root
d	c	b	e^a	EXP	Exponent e^x
d	c	b	LOG(a)	LOG	Natural logarithm
d	c	b	1/a	1/X	One over X (reciprocal)
d	c	b	a^2	X^2	Square
c	b	a	3.1415	PI	Pi 3.14159...
d	c	b	RAD(a)	RAD	Convert degrees to radians
d	c	b	DEG(a)	DEG	Convert radians to degrees

Stack Registers T Z Y X	A & M Command	Description of command
c b a d	RUP	Roll stack up
a d c b	RDN	Roll stack down
d c a b	SWAP	Swap X and Y contents
d d c b MOD a	MOD	Modular arithmetic
d d c b	BRK	Schedule page break If X=0 break If X<>0 ignore
d c b NOT(a)	NOT	Logical NOT operation If X=0 then X=1 If X<>0 then X=0
c b a a	DUP	Duplicate X
d c b FIX(a)	FIX #	Fix X to # decimal places

Helpful facts about Custom Output

- Should there be a math error in A & M commands during the processing of a report, an error message will be displayed and the execution will be transferred to the printing of the section where the error occurred. So MOVE commands not involving math operations should come before the math instructions. Otherwise if a math error occurs, data will not get moved to the print positions before they are printed.
- If a numeric value is too large to fit within the specified print position, asterisks "*****" will be printed to show format overflow.
- Division by zero, does not cause an error. However, it returns the computer's version of infinity and numbers sent to formatted print positions may get printed as "*****". Or, if the result of a division by zero is used in a multiplication operation, an overflow error will probably occur.

- Numbers sent to character print positions will be printed to the maximum precision of the computer. If necessary, the result may be expressed in scientific notation.
- If Assignment & Math is unable to recognize a command, it assumes it is a numeric constant and displays it with quote marks around it. If executed by Custom Output, it will be interpreted as 0 (zero).
- Some commands send their information to print positions, such as PAGE#, these values may be moved from a print position to the stack where they may be used in numeric calculations.
- Print positions cannot be deleted, but they may be turned off by selecting line 0 for printing.
- Custom Output formats may be edited to fine tune contents and positions, however certain kinds of editing can cause the format file to grow "invisibly". Constants specified within the format are stored in a list. If a constant is deleted, it's entry is set to a null. Unless it is the last constant in the list, it is not deleted, since it would upset all the references to the other constants within the list. When a new constant is added, it is put at the end of the current list. So, the wrong kind of editing can make a format grow without giving any improved performance. It is recommended that when new formats are being made, that you start fresh and CREATE the format rather than EDIT an existing format into an unrelated report.

DATA FACTORY VERSION 5.0

Custom Output formats from Data Factory 5.0 version are upwards compatible with 6.0 version with the exception of the APPEND command. To facilitate more extensive character manipulation, the append command in 6.0 does not append a space between two fields, constants, etc. To convert your 5.0 format, you need to insert an 'APPEND " " TO P##' before each of the append statements in your format.

Custom Output Error Messages

The Custom Output Processor in List/Report has a variety of error messages it displays to you, depending on the nature of the fault.

Basically, there are four types of error messages.

1. Unrecoverable. This error indicates that the program had trouble loading or that the integrity of the program is in question. The program cannot continue execution and after reporting some status codes, returns execution to the main menu. Check your equipment and diskettes, if problem persists call customer service.
2. Format load errors. This error means that the format read had difficulty. Check your equipment and diskettes.
3. Record read/write errors. If attempting to write to a write-protected disk, or the data disk is damaged, this error will occur.
4. Assignment & Math errors. These errors are the least severe and most common. Due to the freedom of commands that can be specified in Assignment & Math, it is possible to instruct the computer to do operations it cannot perform. Numerical and character overflows are most common. Character fields may not exceed 255 characters within the processor. The square root of a negative number does not produce a valid result that can be handled. These errors you can correct by altering the commands or the data that Custom Output is to be given to handle.

Error message details.

When an error occurs and assistance is required from Customer Service, it is imperative that you record the error message produced. These messages are absolutely vital in order for aid to be given.

The following notation is used;

dos# - represents a DOS 3.3 error number, see table below.

line# - the line number within the program that the error was encountered.

rec# - record number of data base.

fld# - field number within record.

Unrecoverable error

<<UNRECOVERABLE ERROR OCCURRED>>
ERROR dos# AT LINE line#
PRESS 'RTN' WHEN YOU HAVE MADE A NOTE:

Format read error

ERROR dos# WHILE READING
'format file name'
AT LINE line#

CHECK DISKETTE IN DRIVE
PRESS 'RTN' WHEN READY
PRESS 'CTRL-Q' TO ABORT:

Record read/write error

ERROR #dos# WITH RECORD #rec# FIELD #fld#
PRESS 'RTN' WHEN YOU HAVE MADE A NOTE

Assignment & Math errors

Assignment & Math errors are usually most easily corrected by you. When an error is detected, the program will announce what error has occurred and information that relates to the error. The quickest method to determine the problem is to note the error number, the step and the section where the error occurred. By checking the error message and examining printout of the format, you should be able to understand what went wrong. Some types of errors are based on the content of the stack registers, their contents are displayed in the error message. If a printout of the format is not available, the Tech Info values can be interpreted from the following table.

A&M ERROR #dos# AT STEP step# IN section
TECH INFO rec#/sect#/opr#/m#/n#
X=a Y=b Z=c T=d

dos# - DOS 3.3 error number.

rec# - Current record number in data base.

sect#/section - A&M section executing.

1 = Top of Form

2 = Record

3 = Subtotal

4 = Total

5 = Bottom of Page

opr# - Operation number.

m#/n# - Operation information, function is based on operation number. See table below.

<u>opr#</u>	<u>m#</u>	<u>n#</u>	<u>Interpretation</u>
1	F#	P#	MOVE F# TO P#
2	1	P#	PAGE# TO P#
2	2	P#	RECORD# TO P#
2	3	P#	FILENAME TO P#
2	4	P#	DATE TO P#
2	5	P#	MOVE X TO P#
2	6	P#	TIME TO P#
3	1	F#	MOVE F# TO X
3	2	R#	MOVE R# TO X
3	3	F#	MOVE X TO F#
3	4	R#	MOVE X TO R#
3	5	C#	Constant
3	6	1	+
3	6	2	-
3	6	3	*
3	6	4	/
3	6	5	CHS
3	6	6	Y^X
3	6	7	SIN
3	6	8	COS
3	6	9	TAN
3	6	10	ASN
3	6	11	ACS
3	6	12	ATN
3	6	13	INT
3	6	14	FRC
3	6	15	RND
3	6	16	SGN

<u>opr#</u>	<u>m#</u>	<u>n#</u>	<u>Interpretation</u>
3	6	17	ABS
3	6	18	SQR
3	6	19	EXP
3	6	20	LOG
3	6	21	1/X
3	6	22	X^2
3	6	23	PI
3	6	24	RAD
3	6	25	DEG
3	6	26	RUP
3	6	27	RDN
3	6	28	SWAP
3	6	29	MOD
3	6	30	BRK
3	6	31	NOT
3	6	32	DUP
3	7	R#	INC R#
3	8	R#	DEC R#
3	9	R#	CLR R#
3	10	R#	SUM R#
3	11	R#	SUB R#
3	12	#	FIX #
3	13	U#	MOVE X TO U#
3	14	P#	MOVE P# TO X
3	15	U#	MOVE U# TO X
4	F#	P#	APPEND F# TO P#
5	F#	F#	APPEND F# TO F#
6	F#	U#	APPEND F# TO U#
7	P#	P#	APPEND P# TO P#
8	P#	F#	APPEND P# TO F#
9	P#	U#	APPEND P# TO U#
10	U#	P#	APPEND U# TO P#
11	U#	F#	APPEND U# TO F#
12	U#	U#	APPEND U# TO U#
13	F#	F#	MOVE F# TO F#
14	F#	U#	MOVE F# TO U#
15	F#	R#	MOVE F# TO R#
16	P#	F#	MOVE P# TO F#
17	P#	P#	MOVE P# TO P#
18	P#	U#	MOVE P# TO U#

<u>opr#</u>	<u>m#</u>	<u>n#</u>	<u>Interpretation</u>
19	P#	R#	MOVE P# TO R#
20	U#	F#	MOVE U# TO F#
21	U#	P#	MOVE U# TO P#
22	U#	U#	MOVE U# TO U#
23	U#	R#	MOVE U# TO R#
24	R#	F#	MOVE R# TO F#
25	R#	P#	MOVE R# TO P#
26	R#	U#	MOVE R# TO U#
27	R#	R#	MOVE R# TO R#
28	C#	F#	MOVE C# TO F#
29	C#	P#	MOVE C# TO P#
30	C#	U#	MOVE C# TO U#
31	C#	R#	MOVE C# TO R#
32	C#	P#	APPEND C# TO P#
33	C#	U#	APPEND C# TO U#
34	C#	F#	APPEND C# TO F#

NOTE: Not all commands are capable of producing an error.

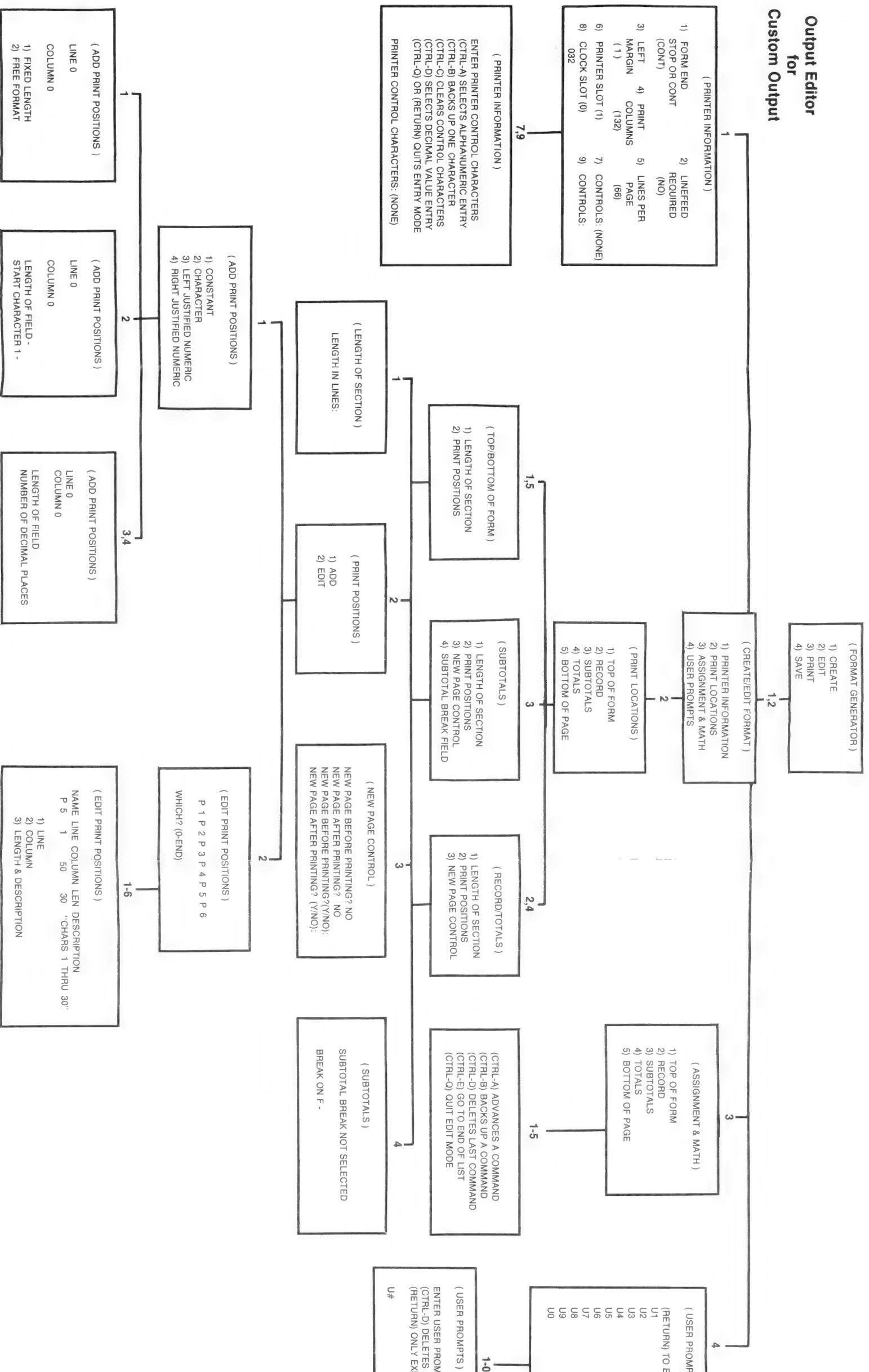
DOS 3.3 error codes

0	NEXT without FOR
1	Language not available
2	Range error
3	Range error
4	Write protected
5	End of data
6	File not found
7	Volume mismatch
8	I/O error
10	File locked
11	Syntax error
12	No buffers available
13	File type mismatch
14	Program too large
15	Not direct command
16	Syntax
22	RETURN without GOSUB
42	Out of DATA
53	Illegal quantity

69 Overflow
77 Out of memory
90 Undefined statement
107 Bad subscript
120 ReDIMensioned array
133 Division by zero
163 Type mismatch
176 String too long
191 Formula too complex
224 UnDEFined function
254 Bad response to an INPUT
255 CTRL-C interrupt attempted

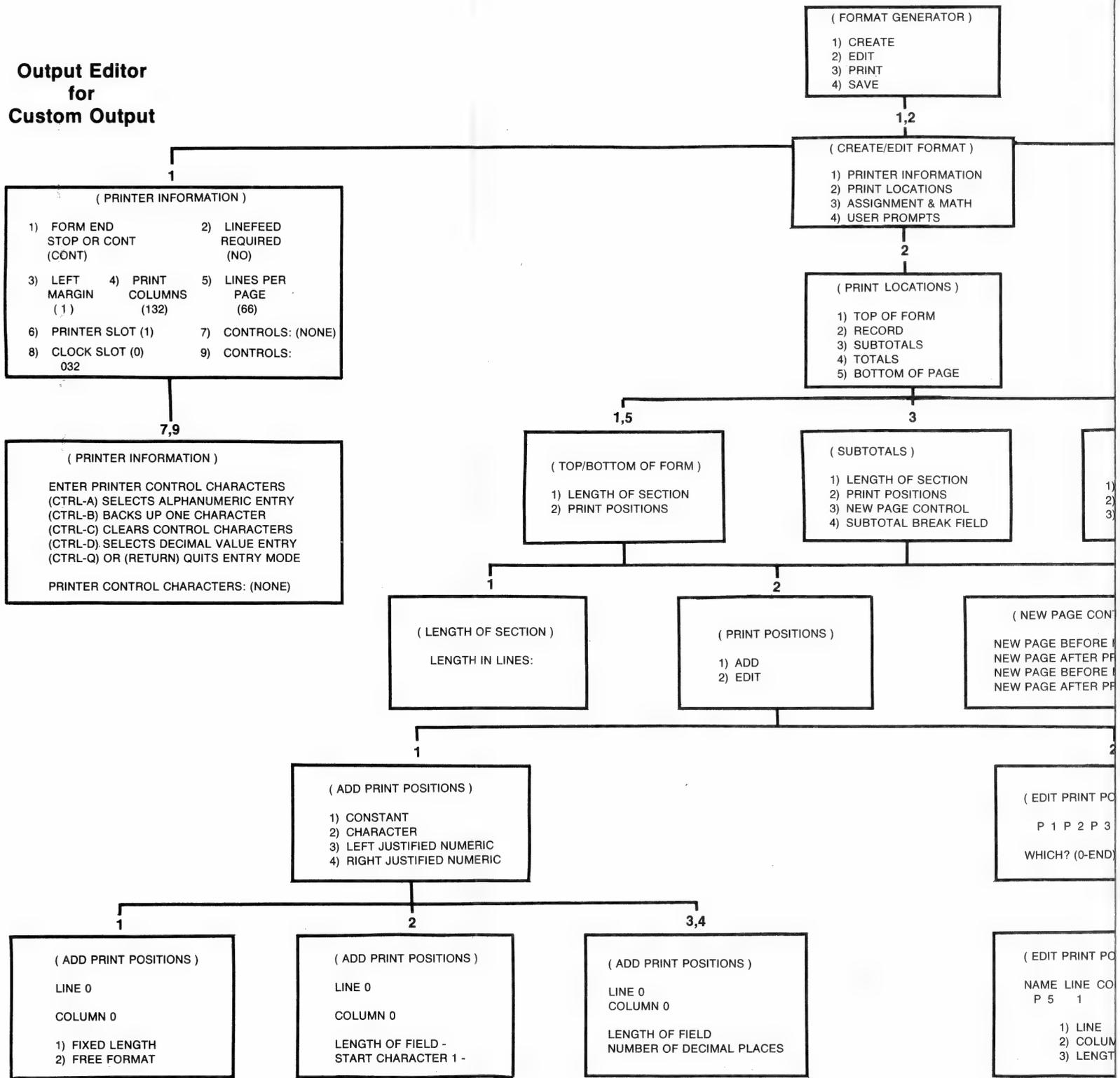


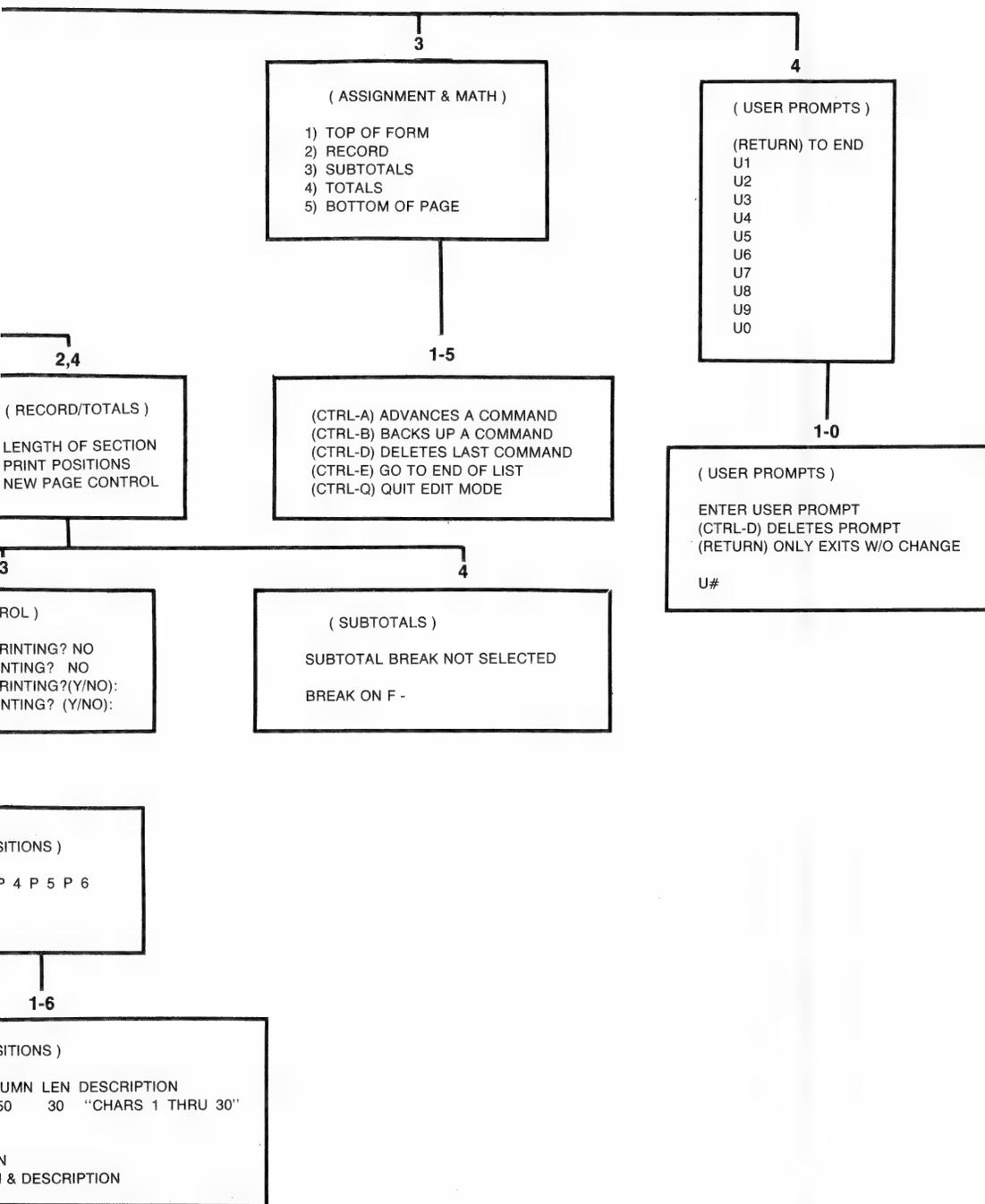
Output Editor for Custom Output





Output Editor for Custom Output





Assignment & Math Commands

COMMAND	OPERATION
ABS	Absolute value(X)
+	Addition (Y+X)
APPEND or A	Append fld, user fld, const, prt pos. TO fld, user fld, prt pos.
ACS	Arc cosine(X)
ASN	Arc sine(X)
ATN	Arc tangent(X)
BRK	Schedule page break if X=0
CHS	Change sign (-X=X)
CLEAR or CLR	Clear R#
COS	Cosine(X) X = radians
DATE	Date to P#
DEC	Dec R# (decrement by 1)
DEG	Convert radians to degrees
/	Division (Y/X)
DUP	Duplicate last stack entry
EXP	Exponent(X) (e ^x)
FILENAME	Filename to P#
FIX	Fix # decimals
FRC	Fraction(X)
INC	Increment R# by 1
INT	Integer(X)
LOG	Natural log(X)
MOD	Modular arithmetic (Y mod X)
MOVE or M	Move fld, reg, prt pos, user fld, X, const. TO fld, reg, prt pos, user fld, X.
*	Multiplication (Y*X)
NOT	Logical not operation(X)
1/X	One over X
PAGE#	Page# to P#
PI	3.14159
RAD	Convert degrees to radians
RDN	Roll down stack
RECORD#	Record# to P#
RND	Random(X)
RUP	Roll up stack
SGN	Sign(X)
SIN	Sine(X) X = radians
SQR	Square root(X)
SUB	Subtract (X) from R#
-	Subtraction (Y-X)
SUM	Add (X) to R#
SWAP	Exchange X & Y stack reg.
TAN	Tangent(X) X = radians
TIME	Time clock to P#
X^2	X squared (X ²)
Y^X	Power (Y ^x)

DELETION

DELETE RECORDS

To delete a record . . .

CHOOSE: option #6 DELETE RECORDS from the MENU SELECTION LIST. Press (RETURN)

The RECORD SELECTION MENU will appear. See the Inspect/Change chapter for an explanation of the options.

For the example . . .

CHOOSE: option #1 Selected Records. Press (RETURN).

You must then enter the numbers of the records you wish to delete.

TYPE: 4-5 (RETURN)

To terminate selection . . .

Press (RETURN)

ALL CORRECT (Y/N)

TYPE: Y

The following prompt will appear:

(A)UTO (M)ANUAL (R)ESTART (Q)UIT

Choose AUTO, by typing A (RETURN), if you want the records to be deleted without the opportunity to review them. **Use the automatic option with caution.**

Choose MANUAL, by typing M, if you want to review each of the selected records and decide whether or not you really want to proceed with the deletion.

Choose RESTART, by typing R, to return to the RECORD SELECTION menu.

Choose QUIT, by typing Q, to return to the MENU SELECTION LIST.

For the practice example, choose **MANUAL**:

TYPE: M (RETURN)

Command keys

The first record will appear on the screen.

If all of the fields do not appear on the screen . . .

TYPE: C

To **SKIP** the current record **WITHOUT** deleting it you would type **S (RETURN)**.

If you want the **DELETION** to occur you should type **D (RETURN)**.

If you want to **RETURN** to the **RECORD SELECTION MENU** of the Delete Records routine, you should type **R (RETURN)**.

To **QUIT** the routine and return to the **MENU SELECTION LIST** you should type **Q (RETURN)**.

For the practice example, **SKIP** the record presently on the screen.

TYPE: S (RETURN)

NOTE: When the last of the selected records is displayed, typing **S** will bring you to the Record Selection menu. If you have performed an Entry Search, you will be able to enter a new Search Item or return to the **RECORD SELECTION MENU**.

Since you had selected two records, the next record will appear on the screen.

Once again you have the same command key options.

Practice Example

For the practice example . . .

TYPE: D (RETURN)

Record #5 will be deleted.

The RECORD SELECTION menu will reappear. You may select more records to be deleted or return to the MENU SELECTION LIST, by choosing option #4.

Return to the MENU SELECTION LIST at this time.

Note the prompt telling you to use Reconfigure to compact your file.

**USE RECONFIGURE (REWRITE)
TO COMPACT YOUR FILES**

When you delete records, the program replaces all of your data with @ signs, but the record is technically still in the file, taking up space on the disk. To remove the record entirely, you must enter the Reconfigure routine and use option #1 Rewrite. (See the chapter on Reconfigure, page 184, for details.)

DELETE FILES

This routine uses the Report disk; so place the disk into drive #1. Place the disk containing the file you wish to delete, into drive #2.

CHOOSE: option #9 Delete Files from the MENU SELECTION LIST.

You will be asked whether or not you wish to delete the file:

**DELETE A FILE
DELETE ACCOUNTS PAYABLE CHECKS (Y/N)**

NOTE: The file name will vary depending upon the file contained on the Data disk.

For the practice example . . .

TYPE: N (RETURN)

You will be returned to the MENU SELECTION LIST.

The deletion will take place if you enter Y (RETURN).

DELETE A FORMAT

To delete a format . . .

CHOOSE: option #19 from the MENU SELECTION LIST.

The following menu will appear:

SELECT WHICH TYPE OF FORMAT TO
DELETE

1. LIST PRINTER FORMAT
2. LIST MONITOR FORMAT
3. CUSTOM INPUT FORMAT
4. CUSTOM OUTPUT FORMAT
5. FILTER FORMAT
6. UPDATE FORMAT
7. RETURN TO MENU

SELECT (1-7)

Enter the option number which corresponds to the type of format you wish to delete.

For the practice example . . .

CHOOSE: option #2 LIST MONITOR FORMAT. Press (RETURN)

This indicates that you wish to delete one of the monitor formats you created through the LIST routine.

You will be prompted to insert the Format disk into drive 2.

Insert the appropriate Format disk, the one containing the format you wish to delete, and then . . .

PRESS: (RETURN).

Because you chose option #2 from the FORMAT DELETION MENU, the names of the monitor display formats, created during the List routine, will appear on the FORMAT SELECTION MENU.

If there are no formats of the type selected, no format names will appear on the menu.

As soon as you enter a number corresponding to one of the formats, that format will be deleted!

For the practice example, enter the option number corresponding to the RETURN TO FORMAT SELECT option.

Do NOT delete a format at this time.

You will be returned to the first menu of the DELETE FORMAT routine.

CHOOSE: option #7 to return to the MENU SELECTION LIST.

Before returning to the menu, the following prompt will appear:

PLEASE INSERT
ACCOUNTS PAYABLE CHECKS VOL 1
INTO DRIVE 2
AND PRESS (RETURN)

Insert the Data disk containing ACCOUNTS PAYABLE CHECKS into drive #2 and ...

PRESS: (RETURN)



REPAIR/RENAME

There are only three reasons to use this routine:

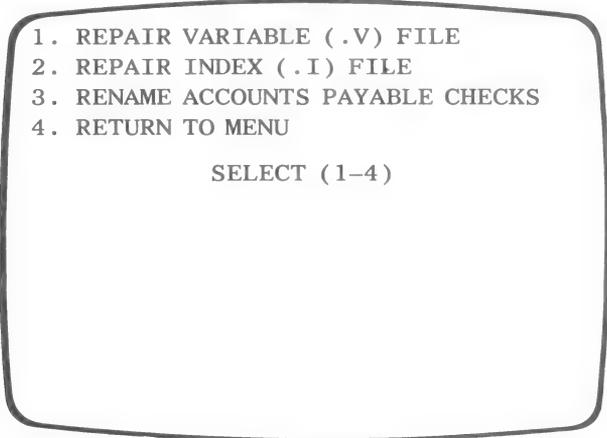
- 1) Rename your data base file.
- 2) To fix the .V (variable) file or .I (index) file *after* you have received a prompt indicating that an error occurred while reading the .V or .I file.
- 3) To convert from the Data Factory 4.0 or 5.0 version to the 6.0 version.

NOTE: If you are following through the practice example in the manual, you do *not* need to step through this routine. Simply read the chapter to familiarize yourself with the routine, in the event that you need to use it in the future.

To enter this routine . . .

CHOOSE: option #20 REPAIR/RENAME from the MENU SELECTION LIST.

The following menu will appear:

- 
1. REPAIR VARIABLE (.V) FILE
 2. REPAIR INDEX (.I) FILE
 3. RENAME ACCOUNTS PAYABLE CHECKS
 4. RETURN TO MENU

SELECT (1-4)

RENAME

CHOOSE: option #3 RENAME from the above menu to rename the data file.

You will be prompted to enter the new file name.

ENTER: the new name and the program will automatically make the change.

REPAIR .V FILE

WARNING: BACK-UP YOUR DATA DISK BEFORE RUNNING THIS ROUTINE.

If the program has indicated that there is an error in your .V file . . .

CHOOSE: option #1 REPAIR VARIABLE (.V) FILE from the Repair/Rename menu.

CAUTION: Do NOT run this routine UNLESS the program has indicated an error in the .V file; or, you are converting a data base created with an old version (4.0 or 5.0) of Data Factory.

A screen will appear displaying the information contained in the variable file. The information contained in this display need not concern you; it is programming information.

If all of the information does not fit on one screen, press (RETURN) to proceed.

At the end of the list of program information, the last line on the screen asks you to verify the number of volumes of your data base:

VERIFY-THIS IS A 1 VOLUME FILE (Y/N)

IMPORTANT: If you are working with a two volume data base, but have only entered information onto one of the volumes, it is considered a ONE volume file.

If the verification line indicates the CORRECT number of volumes . . .

TYPE: Y (RETURN)

The program will verify all of the records and repair the file if possible.

If the verification line indicates the WRONG number of volumes, type N (RETURN).

If you have told the program that it is a two volume file, rather than a one volume file you will be prompted to enter the second volume . . .



PLEASE INSERT
FILE NAME VOL 2
INTO DRIVE 1
AND PRESS (RETURN)

Insert the correct disk and press (RETURN).

Then, enter the correct number of volumes when prompted.

The program will verify all of the records and repair the file if possible.

If the program is unable to repair the file, you will be prompted that the file is irreparable. You will then need to contact our Customer Service Department who will do their best to help.

It is also possible that the program will only be able to read some of your records. You will be told how many records the program has read. If this number does not correspond to the number of

records you believe are contained on the disk, you should contact our Customer Service Department.

After the repair is complete, you will be returned to the REPAIR/RENAME menu. You *must* then repair the .I file.

REPAIR .I FILE

CHOOSE: option #2 REPAIR INDEX (.I) FILE if you have received an error message indicating that the program could not read the .I file, or if you have just repaired the .V file.

The file will be checked.

You will be told if everything is in order and then be returned to the REPAIR/RENAME MENU.

If there is an error in the .I file, it will be rewritten before you are returned to the REPAIR/RENAME MENU.

From the routine's menu, you can return to the MENU SELECTION LIST by using option #4.

SELECT FILES

After using the Data Factory with one file, you need not exit the program and begin again, to work with a different file, or create a new one. You may use option #10 Select Files to select or create another file.

CHOOSE: Option #10 Select Files from the MENU SELECTION LIST.

You will see the following screen:

```
SELECT FILE:
1. ACCOUNTS PAYABLE
2. CATALOG ANOTHER DISK
3. INITIATE A NEW FILE
4. QUIT
SELECT (1-4) ?
```

To use a file on another disk . . .

CHOOSE: option #2 Catalog Another Disk from the SELECT FILE MENU.

The following prompt will appear:

```
PLEASE INSERT DATA DISK
      INTO DRIVE 2
      AND PRESS (RETURN)
```

Insert the disk containing the file you want to use and . . .

PRESS: (RETURN)

The SELECT FILE MENU will reappear with the name of the new file as the first option. To work with the file on the disk . . .

CHOOSE: Option#1

You will be prompted to . . .

ENTER TODAY'S DATE OR REMARK

After you make your desired entry, you will be returned to the MENU SELECTION LIST.

To create a new file . . .

CHOOSE: Option #3 Initiate a New File

See chapter 1, pages 12 - 24 for instructions on initializing a file and creating a data base.

HINT: You can use this routine to enter a new DATE OR REMARK without exiting the routine. You simply choose to work with the file already contained on the Data disk. You will be prompted to enter a date or remark.

SUMMARY

Routines #6, #9, and #19 allow you to DELETE information from the disk.

Option #6 DELETE RECORDS allows you to delete records.

Option #9 DELETE FILES allows you to delete an entire data file (data base).

Option #19 DELETE FORMAT allows you to delete any kind of format.

Routine #10 SELECT FILE allows you to work with a different file without having to exit the program. You may also use this option to create a new data base by choosing to INITIATE A NEW FILE.

Routine #20 REPAIR/RENAME is only used if you want to do one of the following:

- 1) RENAME your data base.
- 2) REPAIR the .V file. Only repair this file if you have received a message indicating that the file is bad or if you are converting data files from an earlier Data Factory version.
- 3) Repair the .I file. You **must** repair this file if you have just repaired the .V file. Otherwise, only repair the file if you have received a message indicating that the file is bad, or if you are converting data files from an earlier Data Factory version.

CONVERT TO NEW VERSION

This section is only for those users who have created files using an earlier version of the Data Factory (4.0 or 5.0) and now want to convert those files for use with the new version, Data Factory 6.0.

CONVERT FROM 5.0 TO 6.0

- 1) Load the Data Factory 6.0 program, inserting the Utility disk into drive #1 and the Data disk from the 5.0 version into drive #2. Follow the instructions in the section called, Using the Data Base Each Day, page 22 .

- 2) When the MENU SELECTION LIST appears:

CHOOSE: option #20 Repair/Rename.

CHOOSE: option #2 Repair Index File.

The program will check the index file and repair it if necessary.

- 3) Run Reconfigure, Straight Transfer by doing the following:

CHOOSE: option #7 from the MENU SELECTION LIST.

ENTER: the option number of the file you wish to convert. You may only convert one file at a time.

CHOOSE: option #2 Straight Transfer.

When prompted, insert a blank disk to be initialized.

If you are configuring a two volume file, you will be prompted to insert a second blank disk to be initialized.

Enter a new name for the reconfigured data base.

Answer N to the prompt asking whether you wish to add fields to the new data base.

WARNING: SWITCH DISK ONLY WHEN PROMPTED.

- 4) Use the new, reconfigured disks with the Data Factory 6.0 version.

CONVERT FROM 4.0 TO 6.0

- 1) Using the FID program found on the System Master disk which came with your Apple computer . . .

DELETE all of the files on your Data disk *EXCEPT*

DATA FILES
FILENAME
FILENAME.V

For example, if your data file is named, *BILLS TO BE PAID*, you would delete all files *EXCEPT*:

DATA FILES
BILLS TO BE PAID
BILLS TO BE PAID.V

NOTE: If you are unfamiliar with the FID program, refer to the manual which came with your computer.

- 2) Load the Data Factory 6.0, using the Utility disk in drive #1 and the Data disk from volume 4.0 in drive #2.
- 3) CHOOSE: option #20 Repair/Rename from the MENU SELECTION LIST.

CHOOSE: option #1 Repair Variable File.

The program will ask you to confirm the number of volumes of the data base.

This number should always be ONE (1).

If any other number is displayed:

TYPE: N (RETURN)

and then . . .

TYPE: 1 (RETURN) for the number of volumes.

The necessary repairs will be performed.

- 4) CHOOSE: option #2 Repair Index File from the REPAIR RENAME MENU.

The Index file will be repaired.

- 5) Run Reconfigure, Straight Transfer, by doing the following:

Return to the MENU SELECTION LIST and . . .

CHOOSE: option #7 from the MENU SELECTION LIST.
Press (RETURN).

When the Reconfigure menu appears . . .

CHOOSE: option #2 Straight transfer. Press (RETURN).

When prompted, insert a blank disk into drive 1.

Enter a new name for the reconfigured data base. Answer N to the prompt asking whether you wish to add fields to the new data base.

WARNING: SWITCH DISKS ONLY WHEN PROMPTED.

- 6) Use the new, reconfigured disks with the Data Factory 6.0 version.



ERROR MESSAGES

It is possible that while using the program you will receive an error message. These messages indicate that for some reason the program was unable to continue functioning.

Typically, these messages are in the following form:

? _____ ERROR IN LINE _____

In the place of the first blank will be the error code number. See the chart below for a translation of the error message and an explanation of the probable cause and remedy for the problem. If after trying to fix the problem you are still unable to continue with the program, you may call Micro Lab's customer service department and they will do their best to help.

In place of the second blank there will be a number indicating where the program stopped functioning. You need not worry about this number unless you find that you need to call our customer service department. If this is the case, simply make a note of the number and report it with the error code when you call.

ERR #	TRANSLATION	CAUSE	REMEDY
4	WRITE PROTECTED	TAB ON DISK OR DISK DRIVE PROBLEM	REMOVE TAB OR REPAIR DRIVE
5	END OF DATA	PROGRAM UNABLE TO READ RECORD DATA	USE INSPECT CHANGE TO REENTER DATA ON BAD RECORD
6	FILE NOT FOUND	INCORRECT DISK IN DRIVE	INSERT CORRECT DISKS AND REBOOT
8	I/O ERROR	HARDWARE PROBLEM WITH THE DISK OR DRIVE	USE BACK UP DISK OR REPAIR DRIVE.
9	DISK FULL	YOU HAVE EXCEEDED DISK CAPACITY	REMOVE ANY FORMATS FROM YOUR DATA DISK
10	FILE LOCKED	EXITED PROGRAM DURING THE RECONFIGURE ROUTINE	CATALOG DATA DISK AND TYPE UNLOCK <i>FILENAME</i>

ERR #	TRANSLATION	CAUSE	REMEDY
12	NO BUFFERS AVAILABLE	PRESS CONTROL-RESET DURING LIST OR SEARCH	TYPE: CLOSE AND THEN TYPE: RUN OR SIMPLY REBOOT
14	PROGRAM TOO LARGE	QUIT WITHOUT RETURNING TO MENU SELECTION LIST	REBOOT: TURN OFF COMPUTER AND BEGIN AGAIN
176	STRING TOO LONG	LIST/SEARCH - PRINT FORMAT TOO WIDE	USE PRINTER CONTROL TO MAKE HOR. PAGE SIZE LESS THAN OR EQUAL TO 255 CHARACTERS LONG
255	CTRL C INTERRUPT	PRESSED CONTROL-C WHEN NOT PROMPTED	REBOOT: TURN OFF COMPUTER AND BEGIN AGAIN

OTHER ERROR MESSAGES

It is possible that when the program tries to read a record and it is unable to do so, you will get the following message:

UNABLE TO READ RECORD ____

The record number will appear in the place of the blank.

At this time, you should enter the Inspect/Change routine and inspect every record.

When the program reaches a record it is unable to read the following prompt will appear:

ERRORS ____ RECORD ____ FIELD ____
PRESS (RETURN)

The number following the word ERROR tells you what kind of error was generated. Consult the above chart for a translation of this message. Make a note of the error, record, and field number and then press (RETURN). The program will try to read the next field, if it is successful the next record will be displayed; otherwise, another error message will appear. Continue to note the error number and the field and record numbers. When you have tried to read all of the records, follow the instructions in the above chart for remedying the problem.

If the error that you have received is an END OF DATA ERROR, use the Inspect/Change routine and select to view each of the bad records. Enter the correct data into the fields which no longer contain the data you originally entered.

If you have received an I/O ERROR, your best solution is to use your backup disk or repair your drives.

NOTE: If you receive an I/O ERROR and do not have a backup disk, you may use reconfigure, straight transfer, and transfer only those records which can be read. After you have transferred the good records, you should reenter the records you were unable to transfer. See the Reconfigure chapter for instructions.

You may receive a message indicating that an error was generated while the program was trying to read the .I or .V file. If this message occurs, you must use the REPAIR/RENAME routine to repair the file. See the REPAIR/RENAME chapter for details.



FILE STRUCTURE / ACCESSING YOUR DATA

If you, as a programmer, need to gain access to the data in your data files, you may use the following lines of code. This code will enable you to read a particular field and record, which you designate. Of course, you can manipulate the code to read several fields and/or records.

```
10 D$ = CHR$ (4)
20 PRINT D$"OPEN DATA FILES"
30 PRINT D$"READ DATA FILES"
40 INPUT A
50 INPUT F$
60 PRINT D$"CLOSE"
70 PRINT D$"OPEN" F$ ".V,L498"
80 PRINT D$"READ" F$ ".V,R0"
90 INPUT NF
100 INPUT NR
110 INPUT MR
120 DIM OF (NF + 1)
130 FOR X = 1 TO NF
140 INPUT OF (X + 1)
150 NEXT
160 PRINT D$"READ" F$ ".V,R1"
170 INPUT NV
180 INPUT LR
190 PRINT D$"CLOSE"
191 PRINT "# OF RECORDS:" NR, "# OF FIELDS", NF
200 RL = OF (NF + 1) + NF
210 INPUT "INPUT RECORD #"; R
220 INPUT "INPUT FIELD #"; F
230 IF R <= LR THEN PRINT D$"OPEN" F$ ",L" RL ",D2"
240 IF R > LR THEN PRINT D$"OPEN" F$ ",L" RL ",D1"
250 PRINT D$"READ" F$ ",R" R ",B" OF (F)
260 S$ = ""
270 GET Z$
280 IF ASC (Z$) < > 13 THEN S$ = S$ + Z$: GOTO 270
285 PRINT
290 PRINT D$"CLOSE"
300 END
```

Before running the above program, insert volume #1 of your data disk into drive #2 and insert the second volume, if there is one, into drive #1.

The following is a step by step explanation of the code as well as an explanation of the Data Factory's file structure.

The program will be divided into four basic parts and each part will be discussed separately.

I. LINES 10-60 - READING DATA FILES

Lines 10-60 read in the name of the file currently on the data disk. The file name is contained in the file called DATA FILES.

DATA FILES is a sequential file containing two items:

- 1) the number of files on the disk. Since the Data Factory 6.0 only allows you to store one file per disk, this number will always be 1 (one).
- 2) the name of the file.

The first six lines of code have the following function:

CODE	FUNCTION
10 D\$ = CHR \$(4)	Sets D\$ equal to CONTROL-D
20 PRINT D\$ "OPEN DATA FILES, D2"	Opens file
30 PRINT D\$ "READ DATA FILES"	Points to file
40 INPUT A	Reads the number of files
50 INPUT F\$	Reads the file name
60 PRINT D\$ "CLOSE"	Closes file

After this portion of the code is executed, F\$ contains the name of the file currently on disk.

NOTE: If you only need to have your program work with one particular file, and you know the name of that file, you can simply enter the line:

F\$ = "FILE NAME" (enter the actual name of the file.)

Or, you may design a routine which permits you to enter the desired filename.

II. LINES 70-190 READ THE VARIABLE (.V) FILE

NOTE: You must read the .V file, before you can do anything with the data contained in your data base.

The .V file is named with the file name (F\$) followed by .V. For example, if the file name is **BILLS TO BE PAID** the variable file will be named **BILLS TO BE PAID.V**.

The .V file is random access with a length of 498.

Although it is a random access file, it only contains two records, 0 and 1. Both of these records are read sequentially.

RECORD 0 contains the following data:

NF – the number of fields

NR – the current number of records

MR – the maximum number of records allowed in the data base.

NF OFFSETS – a list of offsets containing as many items as there are fields in the data base.

RECORD 1 contains the following data:

NV – number of volumes

LR – last record on VOLUME 1.

Lines 70-190 are interpreted as follows:

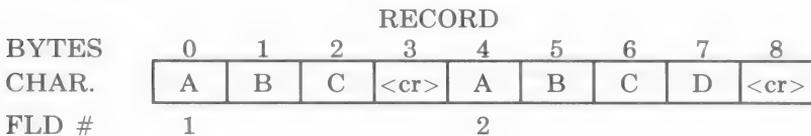
	CODE		FUNCTION
70	PRINT D\$ "OPEN" F\$ ".V,L498,D2"	;	Opens the .V file.
80	PRINT D\$ "READ" F\$ ".V, RO"	;	Points to record 0
90	INPUT NF	;	Reads the NUMBER OF FIELDS

CODE	FUNCTION
100 INPUT NR	‡ Reads the NUMBER OF RECORDS
110 INPUT MR	‡ Reads the MAXIMUM NUMBER OF RECORDS
120 DIM OF (NF+1)	‡ Dimensions the array for storing offsets
130 FOR X = 1 TO NF	‡ Part of loop used to fill array
140 INPUT OF (X+1)	‡ Reads offsets into the array
150 NEXT	‡ Part of loop
160 PRINT D\$ "READ" F\$ "V,R1"	‡ Points to record 1
170 INPUT NV	‡ Reads the NUMBER OF VOLUMES
180 INPUT LR	‡ Reads number of last record on volume 1
190 PRINT D\$ "CLOSE"	‡ Close file

After this portion of code is processed each one of the variables will have the correct value read into it and the offset information will have been read into an array.

III. LINE 200 ESTABLISHING RECORD LENGTH

The offsets are used to determine the record length and to indicate where in the record each field begins. The following diagram represents a section of the disk where one record is stored:



The value of each offset is determined by the byte at which a new field begins. This information is read into the array, created above.

The line of code used to establish the length of record is:

$$200 \text{ RL} = \text{OF} (\text{NF} + 1) + \text{NF}$$

After this line of code is processed, you are ready to have the program read the particular record and field you wish to use.

IV. LINES 210 – 300 READ “FILENAME”

You are now ready to read the file which contains the actual record data. The name of this file is simply the name contained in F\$ and is not followed by a suffix.

This file is a random access file whose length equals the record length established in line 200.

The final lines of code are interpreted as follows:

	CODE	FUNCTION
210	INPUT “RECORD”; R	Enter the desired record number when prompted
220	INPUT “FIELD”; F	Enter the desired field number when prompted
230	IF R <= LR THEN PRINT	Tests value of R; if it is less than or equal to LR then opens FILENAME volume 1 on drive
	D\$ “OPEN” F\$ “,L” RL “,D2”	
240	IF R > LR THEN PRINT	Tests the value of R; if it is greater than LR then opens FILENAME volume 2 on drive 1
	D\$ “OPEN” F\$ “,L” RL “,D1”	

CODE	FUNCTION
250 PRINT D\$ "READ" F\$ "R" R "B" OF (F)	Points to the desired record and field
260 S\$ = ""	Sets output string to null value.
270 GET Z\$	Gets the first character of the field
280 IF ASC (Z\$) <> 13 THEN S\$ = S\$ + Z\$: GOTO 270	Test Z\$; if it is not a <cr>, appends to end of output string and gets next char.
290 PRINT D\$ "CLOSE"	Close file
300 END	

When the entire program has been processed S\$ contains the desired field information.

SUMMARY OF ROUTINES

ENTER DATA

Option #1

Use this option to enter data thus creating records.

You may enter data into a STANDARD INPUT FORMAT which the program creates automatically or a CUSTOM INPUT FORMAT which you design by using the INPUT EDITOR routine.

After choosing a format, entering data is simply a matter of typing the desired information into each field.

INSPECT/CHANGE

Option #2

Inspect/Change is one of three editing routines. You may use this routine to edit data in one or more selected records.

It is most efficient to use Inspect/Change if:

- 1) the changes you need to make to each record occur in a variety of fields
- 2) you only need to edit one or two records.

SORT

Option #3

The sort routine establishes a record order based on the data in a specified field. After establishing the record order, you may use any of the routines in which you generate a report and have the records listed in sorted order.

You can perform a NORMAL sort, which simply sorts on one field.

You can also perform a LEVEL sort, which allows you to sort on more than one field. Select a primary sort field; and your records

are put in order by that field; if there is more than one record with a particular entry, those records can be put in order according to another field, the secondary sort field. When performing a level sort, you can enter up to four fields to use in the sort.

Remember that when you sort the records, you do not actually change the record order. The program creates an index file of the sorted record order. You always have the option of listing records in sorted order or in the order in which they were entered.

NOTE: You must sort your records **BEFORE** using the **INDEX** routine or the **Index** option within the **SEARCH** routine.

You must sort your records **AFTER** using the **RECONFIGURE**, **REWRITE** routine. The **REWRITE** routine erases the sorted order.

COMMON APPLICATIONS:

- 1) Sort your records when you want to put your records in alphabetical order by company name, or numerical order by account number.
- 2) Sort your records on the zip code field when you want to produce a set of mailing labels grouped by zip code.
- 3) Use a level sort when you want to separate your reports by name and then for each name you want the records in order by another field, like the amount owed.

UPDATE

option #4

UPDATE is an editing routine.

It is most efficient to use this routine when:

- 1) you need to make a change to one or more fields of the records
- 2) each record requires different data in the fields.

For example, you may want to change the amount due and date due field in a number of records but each record requires different data entries.

COMMON APPLICATIONS:

- 1) Use Update when entering field information into a reconfigured data base.
- 2) Use Update when you have entered data into a Custom Input format which did not contain all of the fields of your data base. Create an Update format which contains only those fields which were not contained in the Custom Input format.

REPLACE

Option #5

Replace is another editing routine. It has the following functions:

- 1) It allows you to automatically make the same change to every selected record. You can select records by record number or if you choose to select records by performing an entry search, you can search for more than one item in the chosen field.
- 2) It has the added power of allowing you to perform the same calculation on the data of every selected record.

COMMON APPLICATIONS:

- 1) Use replace when a number of records must have current data replaced with the same new information.
- 2) Use replace when you have to multiply the amount in a specific field of one or more records by a fixed percentage.
- 3) Use replace anytime you need to perform a calculation which uses the data already in a field.

DELETE RECORDS

Option #6

If you wish to delete the data from a record, use this option. After deleting the record(s), the data will be replaced with @ signs. The record will still exist on the disk until the file is rewritten, using the Reconfigure, Rewrite routine.

RECONFIGURE

Option #7

The reconfigure routine has four functions:

- 1) **REWRITE:** Removes all of the deleted records (the records with @ signs) from the Data disk. The records are then re-numbered. **NOTE:** Any sort which you have run before using the Rewrite option will no longer be active.
- 2) **STRAIGHT TRANSFER:** Allows you to copy your data base onto another disk and then transfer any or all of your records. You have the added power of adding fields to your data base.
- 3) **CREATE A NEW FILE:** Allows you to create an entirely new data base and then transfer record data from the original file into the new file. You match the fields of your original file to the corresponding fields of your new file and the program transfers the data.
- 4) **APPEND:** Allows you to copy records from one file (source file) onto another file (target file). The target file will then contain all of its original records *plus* all of the records which were copied.

COMMON APPLICATIONS:

- 1) Use **REWRITE** if you have run out of room for record storage and have deleted records without **REWRITING** the file.
- 2) Use **STRAIGHT TRANSFER** to add a field to your data base. Then transfer all of the records onto the target file. You can then use the Update routine to enter data into the new field of the records.
- 3) Use **STRAIGHT TRANSFER** if you are unable to read certain records due to a physically damaged Data disk. Transfer all of the good records and none of the bad. For example, if your original data base has 100 records and records 5-10 are bad, transfer records 1-4 and 11-100. You will then only need to re-enter five records.
- 4) Use **STRAIGHT TRANSFER** to change the field length. When you are prompted to enter the **MAXIMUM SORT**

FIELD, choose to view the fields. You can then edit the desired field and enter the new field length.

- 5) Use CREATE A NEW FILE when you are creating a new data base which has some information in common with an existing data base. You may then transfer the common data from the first data base into the new one.
- 6) Use CREATE A NEW FILE if you feel that it is necessary to rearrange the order of your fields. Enter the field information in the desired order, and then match the fields from your source file to your target file. The data will be transferred into the new data base.

INPUT EDITOR

Option #8

The Input Editor enables you to design your own easy-to-use screen(s) for data input. NOTE: These screens can *only* be used with the ENTER DATA routine.

After creating your screen format, use the ENTER DATA routine to add records by entering information into the fields.

COMMON APPLICATIONS:

- 1) Create a CUSTOM INPUT format when you want to enter field names which are longer than the field length.
- 2) Create a CUSTOM INPUT format when you want to rearrange the field order for DATA ENTRY only. (If you want to rearrange the field order for use throughout the program, use RECONFIGURE, CREATE A NEW FILE.
- 3) Create a CUSTOM INPUT format when you only want to enter information into some of the fields. If later you want to enter information in the other fields, use the UPDATE routine.

DELETE FILES

Option #9

This routine deletes the entire file from your disk. If you are using a Data disk created with the Data Factory 5.0 version, you may use this routine to delete one or more unwanted files from a multi-file disk.

SELECT FILES

Option #10

Select Files allows you to work with a new file without having to first exit the program. You can catalog another Data disk and use the file contained on it.

COMMON APPLICATIONS:

- 1) If you have exited Reconfigure (Straight Transfer or Create A New File) without completing the transfer, the program will still be set to work with the target file, even though it was never fully created. To work with the original, source file, choose the Select File option from the MENU SELECTION LIST. Choose Option #1 to work with the original which is still on the Data disk.

FILE INFO

Option #11

This routine allows you to make a printout of all the necessary file information: field names and length, the maximum number of records that can be entered into the data base, the number of records currently in the data base. If you have a two volume file, you will also be told: the number of volumes you have used so far (1 or 2) and the maximum number of records you can store on volume 1.

COMMON APPLICATIONS:

- 1) Refer to the field information for use with routines which require you to enter field numbers.

- 2) Refer to the information on the number of records in your data base when you need to see how much room you have left on the Data disk.

LIST/REPORT

Option #12

This routine has two functions:

- 1) It creates a Survivor List of the selected records. You must select the records by record number, you may enter either the sorted record number or the physical record number. If you want to create a Survivor List by searching for information within a record, choose MASTER SEARCH.
- 2) It generates reports of record information which you can display to the monitor or print out. You have quite a bit of control over the format of the report, but if you have a complicated format in mind, use the OUTPUT EDITOR to create the format.

COMMON APPLICATIONS:

- 1) Use List/Report when you need to use the same set of selected records with a number of routines. A Survivor List containing the selected records will be created, you can then print a report of the record information or use the records in the Survivor List with another routine.
- 2) Use this routine and choose Standard Output when you want to generate a relatively simple report.
- 3) Use this routine with your Custom Output format when you want to generate a specialized report.
- 4) If you want to make a printout of the data in some of the records, and then reference that report for use while editing those same records, do the following:
 - a) Choose List/Report and select the desired records. The program will put those records into the Survivor List.
 - b) Generate a report using Standard or Custom Output.

- c) Choose one of the three edit routines (Inspect/Change, Update, Replace) and choose to work with the Survivor List.
- d) Edit the record data

SEARCH

Option #13

The Search routine allows you to search a field for one or more entries, and produce a separate listing of records for each entry. You can then label each separate listing so that it is clear what the records have in common.

There is an added feature, the Index option, which automatically generates a separate listing of records for every different entry in the selected field.

COMMON APPLICATIONS:

- 1) Use this routine to produce categorized listings of your records.
- 2) Use this routine when you want to search for an entry in a particular field of the data base and generate a listing of all of those records which contain that entry.

MASTER SEARCH

Option #14

This routine creates a Survivor List of records which are selected by entering criteria which each record must pass before being put into the list. The set of criteria you establish is referred to as a filter. The records are run through the filter and those which "survive" are put into a Survivor List and can then be used with any routine which contains the RECORD SELECTION MENU.

You can design a multi-level filter which gives the program very specific criteria which must be met for a record to survive.

You can, for example, search for data in a numeric field which is greater than one value and less than another value and then search a date field for dates which fall between a certain range.

Then only records which meet BOTH the criteria will survive the filter. You can also design a filter which searches for the same information but any record which meets EITHER requirement will survive.

COMMON APPLICATIONS:

- 1) Use this routine when you need to locate specific records by the data in one or more fields and you wish to use the set of records in other routines.
- 2) Use this routine when you often work with a particular group of records in your data base and you do not want to re-enter their record numbers every time you wish to use them.

INDEX

Option #15

An index can be generated on any field in the data base. The program will generate a list of every different entry in the specified field of all records (or the records in the survivor list).

Next to each different field entry, you can have the following information printed:

- 1) the number of the *first* record in which the entry occurs
- 2) the number of every record in which the entry occurs
- 3) the number of times the entry occurs throughout the selected records of the data base.

You can have the record numbers indicate the sorted record number or the physical record number.

COMMON APPLICATIONS:

- 1) Keep a current index of any or all fields (index option #2, All Records) with a current printout of the record. Use the indices as you would an index to a book, i.e., to find which records contain the desired information.
- 2) At times you will have entered a space or extra character at the end of an entry, you cannot see this difference on a printout but the program makes a distinction. If you then sort

your records, they appear to be sorted incorrectly due to the extra "hidden" character. Make a listing of the All Records Index, on the field you were sorting. If an entry appears twice, you have found the problem. Use one of the edit routines to change the record which had the field entry typed differently.

- 3) The above problem may also cause the Search routine to appear not to work properly. Follow the above procedure to find where the entry was incorrectly typed.

MATH

Option #16

The Math routine calculates a total and average for a specified field of selected records, and allows you to perform a preliminary calculation on the field before generating the total and average.

You may store the result of the preliminary calculation in any field of the data base, including the original field. Or, you may have the result of the calculation used only for use during totaling and averaging. In the latter case, the actual record information will not be altered.

COMMON APPLICATIONS:

- 1) Use this routine when you want to subtract an amount paid from an amount due to obtain a record balance. This routine can be used to perform arithmetic calculations any *between fields* of a record and then store the result in another field.

NOTE: If you want to do mathematical calculations *between records* use the Output Editor routine.

OUTPUT EDITOR

Option #17

This routine allows you to create highly specialized report formats. It also allows you to perform mathematical and trigonometric calculations on your data. You may place the results directly into the selected records or you may simply print the results on the report without storing them in the records.

After creating the output format, use the List/Report routine to print out the report.

COMMON APPLICATIONS:

- 1) Use the Output Editor to create a format which will perform calculations between records.
- 2) Create a Custom Output format to produce reports which you want to print out on pre-printed forms.
- 3) Create a format when the report you wish to generate cannot use the standard vertical or horizontal formats available in Standard Input.

PRINTER CONTROL

Option #18

This routine does the following:

- 1) establishes the length and width of a printed report.
- 2) allows you to choose whether you want right justified fields to be totaled on the report, whether it is printed or displayed to the monitor.
- 3) allows you to enter special instructions to suit your printer's needs.

COMMON APPLICATIONS:

- 1) Always check the default values in this routine before using the List/Report routine or the Search routine.
- 2) Use this routine to enter any special control characters your printer needs in order to adjust the width of the printout.
- 3) If you are using an 80 column card, and do not have an Apple IIe, use this routine to enter the 80 column shutoff commands.

DELETE FORMAT

Option #19

This routine allows you to delete any kind of format.

COMMON APPLICATION:

- 1) If you have been storing formats on your Data disk and you run out of room on the disk, use the FID program on your System Master to transfer the formats onto another disk. Then use the Delete Format routine to remove the formats from the Data disk.

REPAIR/RENAME

Option #20

There are only three reasons to use this routine:

- 1) Rename your data base.
- 2) Fix the .V file or .I file after you have received a prompt indicating that an error occurred while reading the .V or .I file.
- 3) To convert from the Data Factory 4.0 or 5.0 version to the Data Factory 6.0 version.

GLOSSARY

A

ACCESS – locate a piece of information in one of the records.

AND REPEAT – An option used to make creating a filter easier. When a new filter level differs from the previous level only in the constant being compared, use this option. The two levels will be joined with the AND function.

ASCENDING ORDER – the order of records when they have been sorted from smallest to largest. For example, records are said to be in ascending order when they are in order from 1 – 10.

ASSIGNMENT AND MATH – the part of the Custom Output routine where you designate the fields which are to be moved into print locations. Any mathematical calculations you wish performed are also designated in this part of the routine.

B

BACKUP – a copy of a program or data disk made from the original. Create a copy in case your original disk becomes damaged.

BOOT – turn the computer on and make it ready to function with your program.

C

CONSTANT – a value which is not dependent upon the data in your records. This value may be something like a label on a screen format or a particular number used for comparison in a filter model.

CONTROL – a key on the left hand side of the keyboard which is used in conjunction with another key. Holding the control key while pressing another key activates a command.

CURSOR – the little box which appears on the screen and indicates where the next character will appear.

CUSTOM INPUT FORMAT – a format which you design to make data entry suit your specific needs.

CUSTOM OUTPUT FORMAT – a format which you design to enable you to perform complex mathematical operations on your data as well as gain greater control over the design of your output reports.

D

DATA – information you enter into a record.

DATA BASE – a collection of records which share a common subject. After designing a data base you can access some or all of the information contained in the records.

DATA FILE – (See data base.)

DATE FIELD – when you wish to sort a field containing a date, the date must appear in the format mm/dd/yy

DELETE – remove data, records, formats, or entire files from the disk.

DESCENDING ORDER – the order of records when they have been sorted from largest to smallest. For example, records are said to be in descending order by date when the record with the most recent date appears first.

E

ENTERED ORDER – the actual numbered record order. This order does not change when the records are sorted.

F

FIELD – a place holder on a record into which a specific type of data will be entered.

FILTER – a set of qualifications used to indicate to the computer the records with which you need to work.

FORMAT – a design for data entry and output. For example, when you design a data entry screen, you are creating a screen format.

I

INDEX ROUTINE – A routine which can generate three types of output. It can generate a listing of each unique entry and the first record in which it occurs; a listing of each unique entry and every record in which the entry occurs; a listing of each unique entry and the number of times the entry occurs.

INDEX A SEARCH FIELD – Through the search routine, the program can automatically generate a categorized listing of your records. Simply choose a field on which to index and the program will find each unique entry and generate a separate list of records for each entry.

INITIALIZE – prepare a particular program or disk for use; the program will set all values to zero.

INPUT FORMAT – a format which you design specifically for entering data.

L

LEVEL SORT – a sort which works on more than one field at once.

LIST – display each record in the data base.

LOAD – take a file from disk storage and put it into memory so that you can work with the file.

M

MATH ROUTINE – a routine which calculates a total and average for a specified field of your data base. The routine also allows you to perform preliminary calculations between fields which will affect the total and average. If you wish, you may store the results of the calculation in any field of the data base.

N

NOP – no operation. A place holder used when creating a filter or a replace model, after a place has been reserved, a new level can be inserted at another time.

O

OR REPEAT – an option used to make filter creation easier. When a new filter level differs from the previous level only in the constant being compared, use this option. The two levels will be joined with the OR function.

P

PARTIAL ENTRY SEARCH – when designing a filter you can choose to let pass any record in which the beginning of the field entry matches the constant. This type of matching is called a part match.

PHYSICAL ORDER – The order in which the records were entered into the program.

PRINTER CONTROL ROUTINE – A routine which enables you to indicate special features of your printer. Even if you do not have a printer, use this routine to establish the number of decimal places in justified fields, as well as indicate whether the program should total all justified fields at the end of a report.

PROMPT – a question or message that appears on the screen asking for information or giving instructions.

R

RECONFIGURE – a routine which allows you to transfer the records from one data base into another data base.

RECORD – analogous to a form which contains specific data on a subject.

RECORD RANGE – a certain group of records, designated by record number, which you wish to be put through a filter, e.g., 3–10.

REPLACE – a routine which permits you to make systematic changes to field values in every one of the selected records. For example, you can perform a calculation on an entry in a specified field and then have the result replace the original entry.

S

SEARCH – a method of searching records in which every record is inspected and those which match the requirements are displayed.

SORT – arrange records in ascending or descending order.

SORTED ORDER – the order of records after they have been sorted.

SOURCE FIELD – the field from which data is being transferred. Data is taken from a source field and moved into a target field.

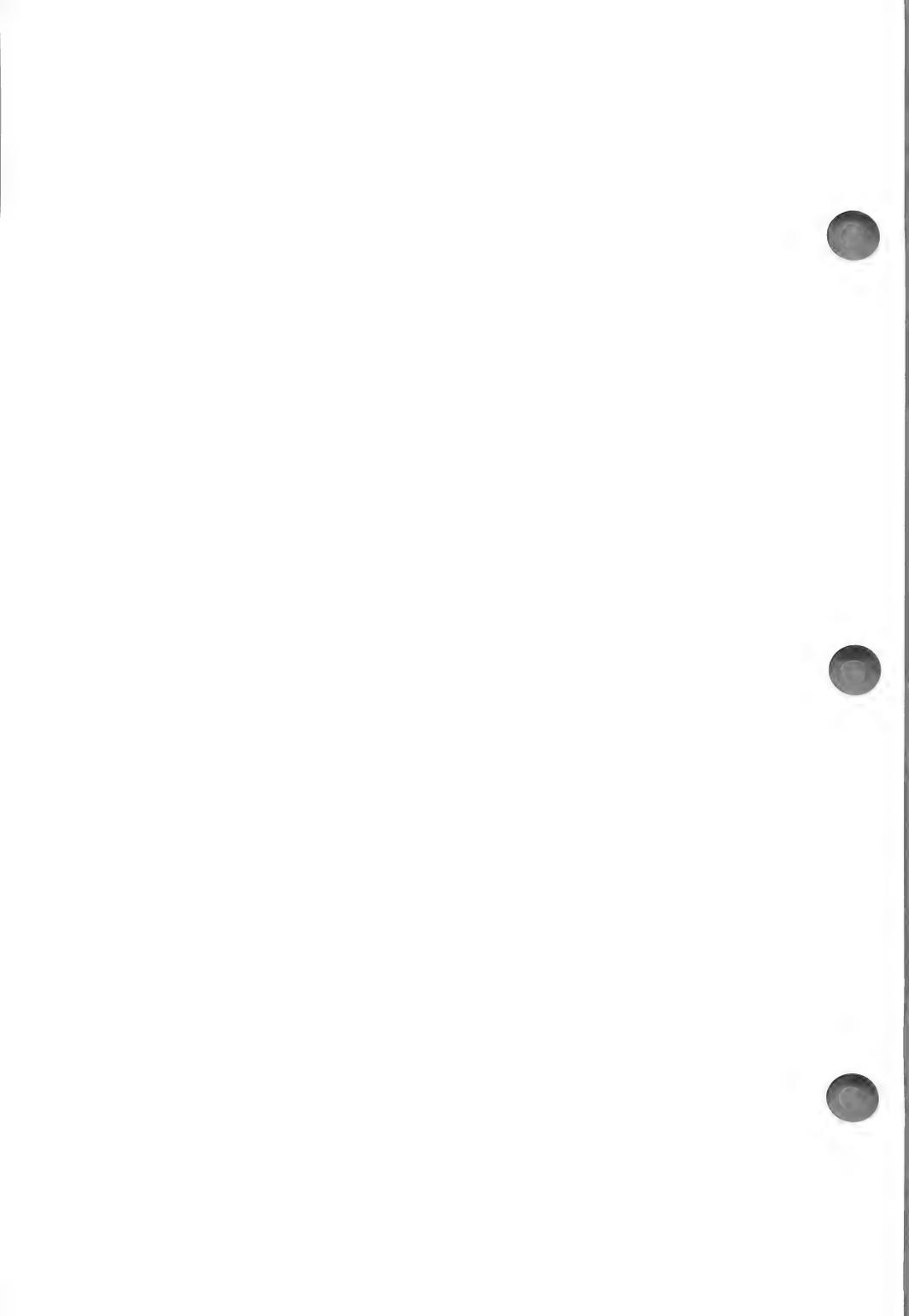
SUBSTRING ENTRY SEARCH – matching any part of a field entry to a constant. This matching takes place during the filter routine.

T

TARGET FIELD – during the Reconfigure routine, you must indicate into which field the new data should be placed. This field is called the target field.

U

UPDATE – a routine which allows you to edit selected fields of each selected record.



INDEX

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MICRO LAB PROTECTION PLAN DATA FACTORY WARRANTY

Your system includes the first year's Warranty in the purchase price. Micro Lab has instituted a unique policy to keep your program current. The Warranty provides complete protection for any renewals or updates. Micro Lab wants you to stay with the system.

Simply fill out the Warranty form and mail it to Micro Lab to initiate your full year's coverage.

After the first year, you may prefer to invest in our Extended Warranty at a minimum expense. You may purchase our Extended Warranty Agreement Policy for \$30 per year. **A renewal invoice will be sent prior to expiration of warranty.**

Only the original Warranty Form will be accepted. Please do not send us a photocopy of this form. Instead, send us the original and make a photocopy for your records if you need a copy.

The warranty is needed to:

- notify you of new releases.
- alert you to any price increases.
- renew damaged disks.

The disk with an authorized serial number will be renewed and/or replaced on a top priority basis within the annual warranty period if they are accidentally blown, damaged, or become inoperable with normal use and handling. We will replace the disk as long as normal care and maintenance have been exercised.

- keep you informed of any updates to the Data Factory.

Micro Lab will notify all policy holders when an update is made available and at that time you will be informed of our update procedure. The update is also covered by your Extended Warranty Policy. Any documentation necessary to describe changes in operation will be sent only with the first disk that is returned.

- entitle you to customer service.

We require that users who call or write for service or information be purchasers of the Data Factory. When you call or write

for service, we will refer to your Warranty Form so that we know that you have a legitimately purchased program.

LIMITED WARRANTY AND LIMIT OF LIABILITY

MICRO LAB SHALL IN NO EVENT BE LIABLE FOR LOSS OF DATA FILES FROM ANY CAUSE: BREAKS IN YOUR DISKS, LOSSES CAUSED BY INTERRUPTION OF POWER, FIRE, FLOOD, LIGHTNING OR OTHER NATURAL AND/OR MANMADE DISASTERS, ETC., THAT RESULT IN LOST TIME AND RECORDS ARE NOT COVERED IN THIS WARRANTY. IN ANY EVENT, MICRO LAB SHALL NOT BE LIABLE FOR CONSEQUENTIAL OR REMOTE DAMAGES AND ITS LIABILITY IN ANY CASE SHALL BE LIMITED TO THE COST OF DISK REPLACEMENT.

Micro Lab, or its dealers, MAKE NO WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE APPLICABILITY OF THIS GROUP OF PROGRAMS TO ANY SPECIFIC PURPOSE. It is solely the purchaser's responsibility to determine its suitability for a particular purpose.

Micro Lab accepts no liability for loss or damage caused or alleged to be caused, directly or indirectly, by programs sold by them or their dealers including, but not limited to, any interruption of service, loss of business or anticipatory profits or consequential damages resulting from the use of such programs.

This statement of limited liability is in lieu of all other warranties or guarantees, expressed or implied, including warranties of merchantability and fitness for a particular purpose.

CANCELLATION

Micro Lab reserves the right to cancel the policy for:

- non-receipt of timely payment.
- expiration of agreement.
- unauthorized disks not supplied by Micro Lab according to specifications.

- unauthorized reproduction of the Manual in any form or by any means, electronic or mechanical, including photocopying, recording or by any retrieval system, without permission in writing from Micro Lab.

MICRO LAB RESERVES THE RIGHT IN ITS SOLE DISCRETION TO CANCEL THIS WARRANTY FOR FAILURE TO TAKE NORMAL CARE OF DISKS OR REPEATED ABUSE TO THE PROGRAM, IN WHICH CASE PREMIUM WILL BE REFUNDED LESS COST OF DISKS REPLACED DURING COVERAGE.

“ANY UNAUTHORIZED DUPLICATION OF THE PROGRAM WILL VOID OUR WARRANTY AGREEMENT.”

COPY DISKS

Make a backup copy of all data disks so that you are prepared if anything should go wrong.

LIFESAVER

If your disks are somehow damaged, Micro Lab has a program called **LIFESAVER** (TM) with a unique data recovery design. Unlike programs that only recover lost data at the file level, **LIFESAVER** also can recover data at the nibble level. Ask your dealer about **LIFESAVER** or call Micro Lab for more information.

PROPER CARE OF DISKS

You should store your disks in a special diskette holder away from dust, heat, magnetic objects and physical stress, like children and animals! It is also a good idea to keep your data disks in a separate location — the most secure being in a bank vault or fire proof area. Your records are vital. Treat these disks with respect as they represent money, especially in terms of time. Loss of

these records would require hours of additional work with, perhaps, no way to retrieve part of the data. Do not be careless. Your time is valuable!

REPLACEMENT PROCEDURES

Any blown or damaged, legitimate Data Factory Program disk may be returned to Micro Lab with a \$10 handling fee per disk each time a replacement is required after the first year. See Extended Warranty for complete coverage. The Extended Warranty will void the \$10 handling fee.

Securely enclose disks in appropriate cardboard holders or other protective devices. Micro Lab will return the Data Factory Program disk within 30 days. We must have your original, legitimate Data Factory Programs before we will replace them with another. In case of fire or damage to the disk, please send any recognizable part of the disk containing our labels with your serial number and, if possible, proof of purchase from the store where it was bought.

All requests for renewal must be accompanied by your name, address, disk serial number, and expiration data of warranty.

Prices are subject to change. A notice of 30 days will be given to dealers and users who are on file with Micro Lab.

WE INVITE YOU TO HELP US

We solicit your contributions for ideas to help yourselves! If you have any suggestions that we should include that would help you to do your data management better, tell us about them.

Any programmers or people with new product ideas are always invited to submit them to our lab for our confidential evaluation. Our dynamic marketing plan and generous royalty agreements are most attractive.

**DATA FACTORY
WARRANTY APPLICATION FORM
FIRST YEAR PAID**

Fill out this Warranty Application IMMEDIATELY and return it to Micro Lab, 2699 Skokie Valley Road, Highland Park, IL, 60035, (312)433-7550. You will receive a numbered policy within 30 days after we receive this application form. **Your system includes the first year's Warranty in the purchase price.**

NAME _____

ADDRESS _____

CITY _____ STATE _____

ZIP _____

Serial # _____

(on the white label on the back of the Data Factory Program disk)

Purchase Date _____

Dealer Name _____

Location _____

How did you first become aware of this product? Please check:

Dealer _____ Friend _____ Magazine Ad _____

Magazine _____

This form must be signed and returned to Micro Lab. I have read the Warranty and agree to its terms.

SIGNATURE _____

DATE _____

